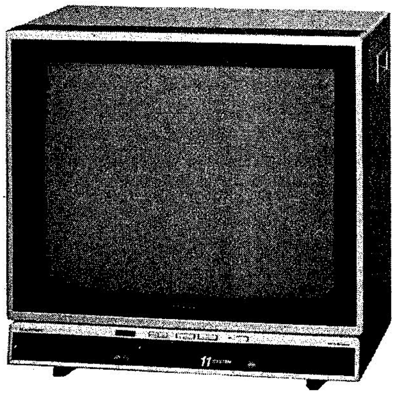
# SERVICE DATA
## FILE NO. 020-975
## 11 SYSTEM

# TOSHIBA
## COLOUR TELEVISION
# 289X4Y



## SPECIFICATIONS

| | | |
|---|---|---|
| **Power Input Rating:** | 170 watts (nominal) AC110 ~ 245 volts 50/60Hz | |
| **Aerial Input Impedance:** | 75 ohm unbalanced type VHF and UHF | |
| **Receiving Channels:** | **PAL B/G, SECAM B/G system** | |
| | Any of VHF channels | channels 2 to 12 |
| | Any of UHF channels | channels 21 to 69 |
| | **PAL D/K, SECAM D/K system** | |
| | Any of VHF channels | channels 1 to 12 |
| | Any of UHF channels | channels 21 to 69 |
| | **PAL I system** | |
| | Any of UHF channels | channels 21 to 69 |
| | **NTSC standard (US M, JAPAN M) system** | |
| | Any of VHF channels | channels 2 to 13/1 to 12 |
| | Any of UHF channels | channels 14 to 78/13 to 62 |
| | **NTSC 3.58/5.5 System**<br>**NTSC 4.43/5.5 System** | VTR Play Back |
| | **PAL 50/60Hz System**<br>**SECAM 50/60Hz System**<br>**NTSC 50/60Hz System** | VIDEO DISK Play Back |
| **Intermediate Frequencies:** | Picture I-F carrier frequency | 38.9MHz |
| | Sound I-F carrier frequency | 33.4MHz |
| **Chassis Construction:** | IC Solid State, Horizontal Chassis | |
| **Picture Tube:** | A66JLH70X(W) (66 cm measured on diagonal of viewable picture area) 110° Deflection | |
| **Sound Output:** | 5W + 5W (at 10% harmonic distortion), | |
| **Speaker:** | Flat: 5 cm x 12 cm (2 pcs.) | |
| **Cabinet:** | Table type, Wooden Cabinet with Plastic Mask. | |
| **Dimension:** | Height | 60.4 cm |
| | Width | 64.7 cm |
| | Depth | 51.8 cm |
| **Weight (Net):** | 52 kg | |
| **Features:** | Full Square tube, VIDEO and AUDIO input/output terminals, External speaker terminal, Multi spatial Sound System, Remote Control. | |

Specifications are subject to change without notice.

Printed in Japan Jul. 1986 (So)

# SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION," "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" DESCRIBED BELOW.

## X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 30kv at zero beam current (minimum brightness) under 110 ~ 245V AC power source. The high voltage must not, under any circumstances, exceed 32kv. Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

## SAFETY PRECAUTION

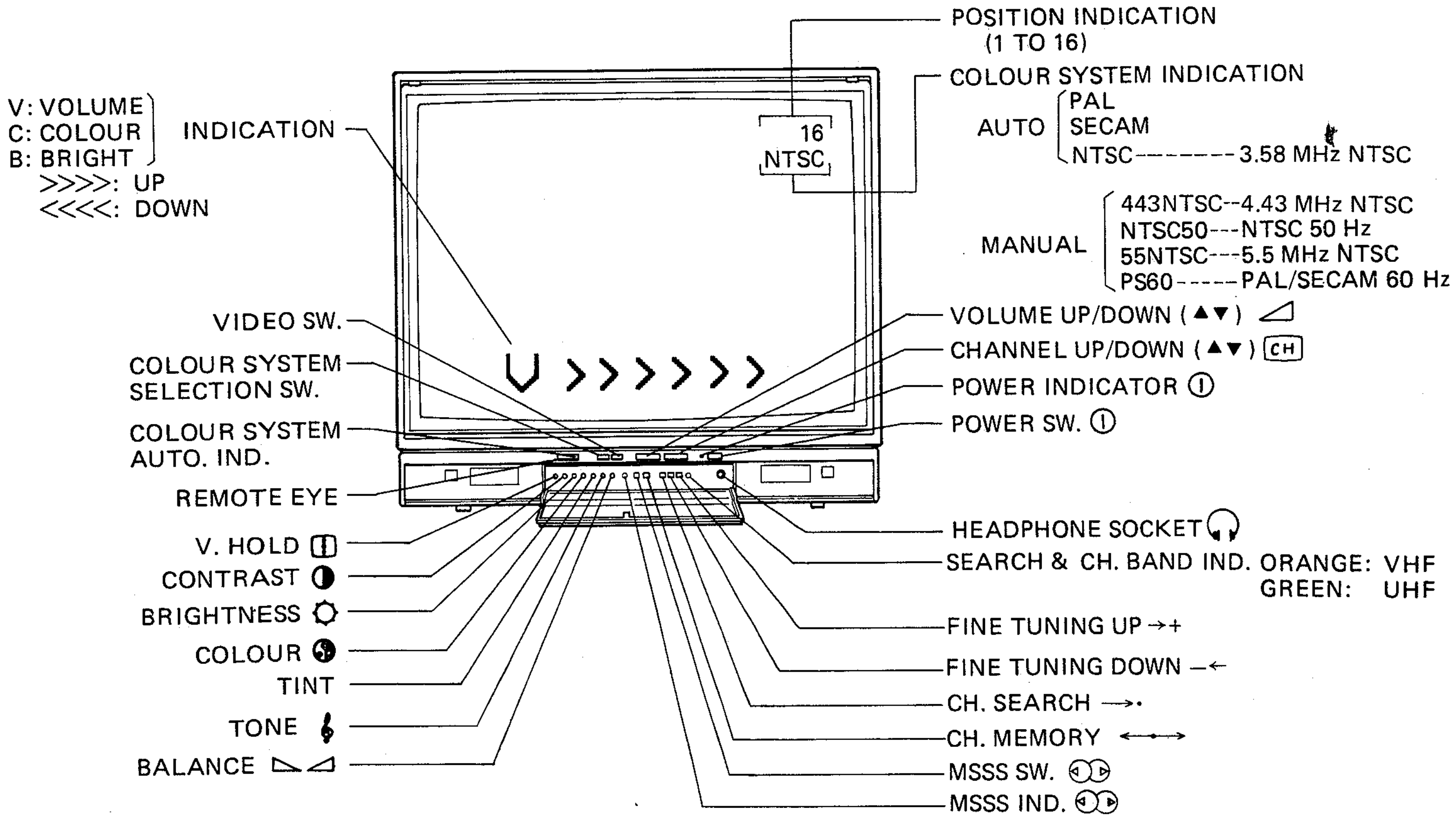
1. Potentials as high as 28 kV are present when this receiver is operating. Operation of the receiver outside the cabinet or with back board removed involves a shock hazard from the receiver.
    1 Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment.
    2 Alway discharge the picture tube anode to the receiver chassis to keep off the shock hazard before removing the anode cap.
    3 Perfectly discharge the high potential of the picture tube before handling the tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled.
2. If any Fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list.
3. When replacing parts or circuit boards, wind the lead wires around terminals before soldering.
4. When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor 10mm away from circuit board.
5. Keep wires away from high voltage or high temperature components.
6. This receiver can be operated under AC 110 ~ 245 volts, 50/60Hz. NEVER connect to DC supply or any other power.

## PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements, electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.

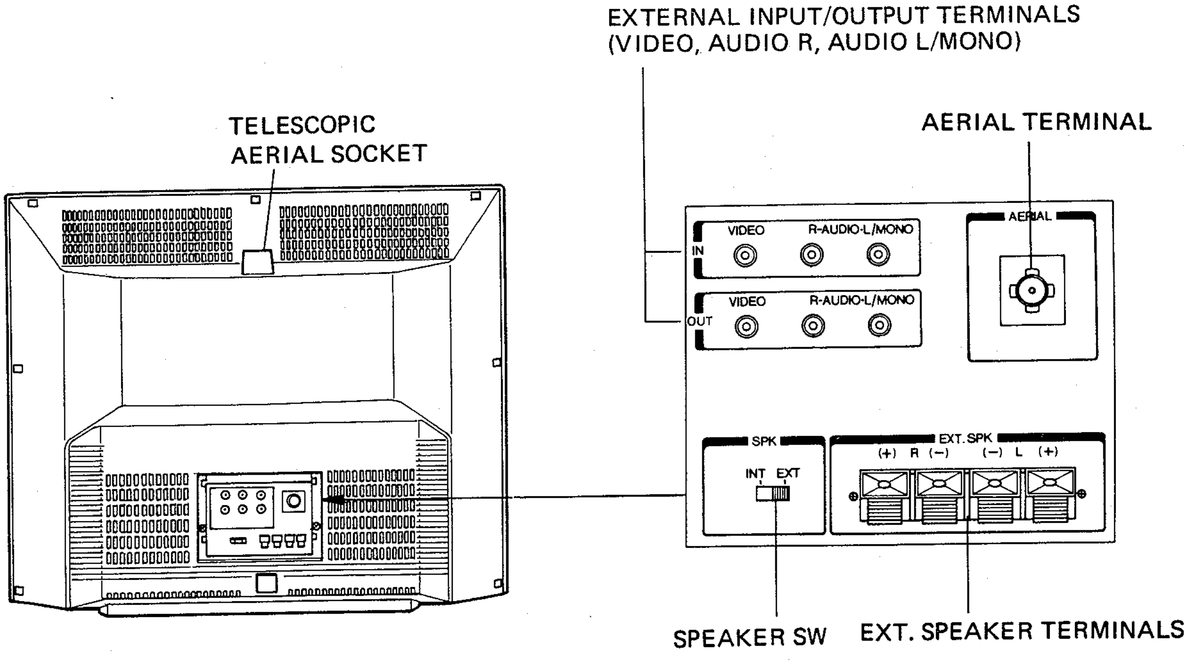
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY RADIATION.

# FRONT CONTROL AND REAR VIEWS



POSITION INDICATION (1 TO 16)
16
NTSC
COLOUR SYSTEM INDICATION
AUTO
PAL
SECAM
NTSC--------3.58 MHz NTSC
MANUAL
443NTSC--4.43 MHz NTSC
NTSC50---NTSC 50 Hz
55NTSC---5.5 MHz NTSC
PS60-----PAL/SECAM 60 Hz
V: VOLUME
C: COLOUR
B: BRIGHT
INDICATION
>>>>: UP
<<<<: DOWN
V >>>>>>
VIDEO SW.
COLOUR SYSTEM SELECTION SW.
COLOUR SYSTEM AUTO. IND.
REMOTE EYE
V. HOLD
CONTRAST
BRIGHTNESS
COLOUR
TINT
TONE
BALANCE
VOLUME UP/DOWN (▲▼)
CHANNEL UP/DOWN (▲▼) CH
POWER INDICATOR
POWER SW.
HEADPHONE SOCKET
SEARCH & CH. BAND IND. ORANGE: VHF
GREEN: UHF
FINE TUNING UP →+
FINE TUNING DOWN –←
CH. SEARCH →·
CH. MEMORY ←·→
MSSS SW.
MSSS IND.

FRONT VIEW



EXTERNAL INPUT/OUTPUT TERMINALS (VIDEO, AUDIO R, AUDIO L/MONO)
TELESCOPIC AERIAL SOCKET
AERIAL TERMINAL
AERIAL
IN
OUT
VIDEO
R-AUDIO-L/MONO
SPK
INT
EXT
EXT. SPK
(+) R (–) (–) L (+)
SPEAKER SW
EXT. SPEAKER TERMINALS

REAR VIEW

# CONTROL ADJUSTMENTS

## TO SWITCH ON THE TV SET

1. Push in the POWER switch. POWER indicator lights up and the receiver is ready to operate.
   Note: If you do not use the TV set for long time, turn off the power switch for safety.
2. Push [CH] ▲▼ (channel UP/DOWN) button to turn the set on. (You can also operate the receiver with remote control hand unit by following the steps on page 6.)
   The set will turn on and a picture will appear after a few seconds. (To switch off the set, push the power button again.)

## TO ADJUST VOLUME

Keep on pressing the VOLUME UP button for increase in volume. (V > - - →> on the TV screen)
Keep on pressing the VOLUME DOWN button for decrease in volume. (V <← - - < on the TV screen)
Release the button at your desired volume level.

## CHANNEL SELECTION AND TUNING

You can select your favourit program by the channel selection keys on the remote control hand unit or "CHANNEL UP/DOWN" keys on the front of the receiver.
To enjoy the program which is not preset, set the channel by following procedure.

1. Channel preset procedure

(1) Select the position to be preset
by position Button (▲ or ▼ ) on T.V. set or remote control hand unit or by Direct Position Selector on remote control hand unit.
To select the position 11 to 16, push "1 –" Button at first and then push following digit next.

11th position "1–" and "1"
12th position: "1–" and "2"
13th position: "1–" and "3"
14th position: "1–" and "4"
15th position: "1–" and "5"
16th position: "1–" and "6"

(2) Search the program
by "Search" Button.
Search starts from the channel already preset toward the highest channel in UHF band.
Search Indication L.E.D. will be flashing during search in orange at VHF or in green at UHF.
When television signal is caught, flashing of L.E.D. stops and keeps to light.
Note: Search returns to the lowest channel in VHF band and stops.
Then longer interval flashing of L.E.D. indicates the end of "search."
If necessary, push "Search" Button again to find another television signal.

(3) Store the channel
Store the channel in Memory I.C. by "Memory" Button if the desired program comes out.
If not, repeat procedure (2).
When storing is finished, Search Indicator goes out.

(4) Repeat procedure above from (1) to (3) at another position as well.

## BRIGHTNESS CONTROL ☼

Adjust the BRIGHTNESS Control for natural brightness if the picture appears too dark or too light. For the best results, adjust the BRIGHTNESS and CONTRAST Controls together, until the picture is clear and sharp.

## CONTRAST CONTROL ◐

If the picture does not show desired contrast between light and dark shades, adjust the CONTRAST Control for desired picture quality. A slight readjustment of the BRIGHTNESS Control may also be necessary.

## TO ADJUST COLOUR ●

After obtaining the best black and white picture, carefully turn the COLOUR Control slowly clockwise.

## VERTICAL HOLD ⊞

If picture moves up or down, adjust VERTICAL HOLD by rotating the control clockwise, then counterclockwise until the image "locks" on screen.

## TO ADJUST TINT (for NTSC 3.58 and NTSC 4.43 systems) ▷◁

Adjust the TINT Control to obtain natural facial tones.

When facial tones are natural, all other colours in your picture will be seen in true-to-life brilliance.

## TONE CONTROL

Turn the TONE control clockwise. High tones are enhanced. Adjust the controls to your preference.

## BALANCE ADJUSTMENT

You can adjust the balance of the Left/Right speakers when listening to stereo as follows.

Turning the BALANCE control clockwise lowers sound from the left speaker.

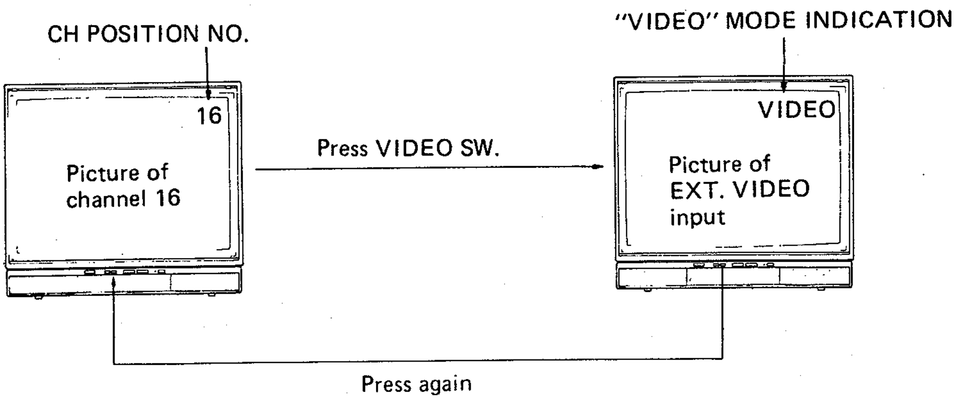
Turning the BALANCE control counterclockwise lowers sound from the right speaker.

## VIDEO SWITCH

When you enjoy the program from the video equipment, such as VTR, press this button on and "VIDEO" indication comes out as illustrated below.

The TV picture changes as shown in the following figures.

Watching channel 16 first



NOTE: The "VIDEO" mode indication may happen to appear on the screen during playback of a VCR or a video disk player (especially at still or fast forward mode) while the indication is set to the "OFF·SCREEN" mode. This is not the trouble of the receiver.

## MSSS (Multi Spacial Sound System)

Push in the MSSS button once, so MSSS indicator will light and you can enjoy an enhanced dimension in sound. The second pressing turns the sound to original.

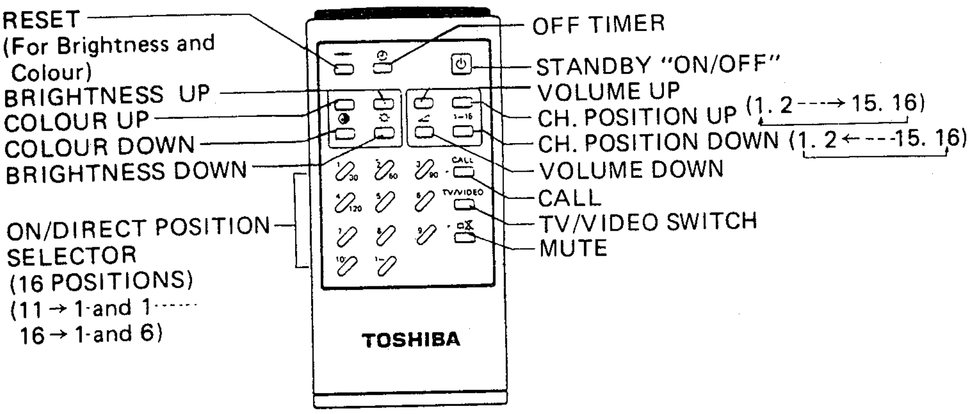
## HEADPHONE SOCKET

When listening to a program with headphone, insert the headphone connector plug into this socket. This automatically shuts off the sound from speakers.

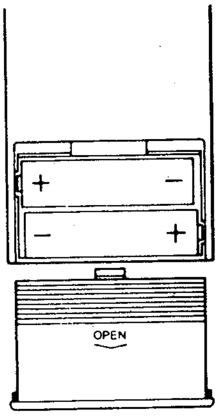
# REMOTE CONTROL OPERATION

## INSTALLING THE BATTERIES

1. Remove the battery cover (See figure right).
2. Install 2 "AA" (penlight size) 1.5 volt batteries so the "+" and "−" marks on the batteries match the "+" and "−" marks inside the unit.
3. Install the battery cover.


RESET
(For Brightness and Colour)
BRIGHTNESS UP
COLOUR UP
COLOUR DOWN
BRIGHTNESS DOWN
ON/DIRECT POSITION SELECTOR
(16 POSITIONS)
(11 → 1-and 1······
16 → 1-and 6)
TOSHIBA
OFF TIMER
STANDBY "ON/OFF"
VOLUME UP
CH. POSITION UP (1. 2---→ 15. 16)
CH. POSITION DOWN (1. 2←---15. 16)
VOLUME DOWN
CALL
TV/VIDEO SWITCH
MUTE

FRONT VIEW



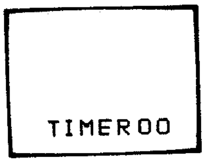
REAR VIEW

## REMOTE OPERATION

Before using the Remote Hand Unit, push the power switch on the receiver to turn the TV set on.

1. STANDBY "ON/OFF" BUTTON
   To switch on, push the button. To switch off, push the button again.
2. ON/DIRECT POSITION SELECTOR
   To switch the TV set "ON", press any of the position buttons, and the program in that position comes out.
3. VOLUME UP or DOWN Button.
   ⊞ Continuous press increases Volume gradually. (V >---→>) are displayed on the TV screen.
   ⊟ Continuous press decreases Volume gradually. (V <←---<) are displayed on the TV screen.
   Release the button at your desired volume.
4. BRIGHTNESS UP or DOWN Button
   ⊞ Continuous press increases Brightness gradually. (B >---→>) are displayed on the TV screen.
   ⊟ Continuous press decreases Brightness gradually. (B <←---<) are displayed on the TV screen.
5. COLOUR UP or DOWN Button
   ⊞ Continuous press increases Colour gradually. (C >---→>) are displayed on the TV screen.
   ⊟ Continuous press decreases Colour gradually. (C <←---<) are displayed on the TV screen.
6. CALL Button
   The selected CH. No. is indicated on the TV screen when the "CALL" button is pressed.
   The indication disappears by the second press.
7. RESET
   By pushing the RESET button, the levels of the colour and the brightness return to the original levels.
8. TV/VIDEO
   The function of this button is exactly the same as "TV/VIDEO SWITCH" described on page 6.
9. MUTE Button
   Pushing the button stops the sound temporarily.
   Pushing the button again returns the sound to the volume at which it was set immediately before the muting.
   Use when the telephone rings.

## 10. OFF TIMER



This TV set is equipped with an off-timer. This feature can be used to turn the receiver off automatically at the end of a preset period (30, 60, 90 or 120 minutes). Timer setting can be performed using the TIMER Button and the TEN KEY Buttons. While you are setting it, the function is displayed at the lower part of the screen. To set the off-timer, operate as follows:

■ For example, if you wish to switch the TV set off after 120 minutes:

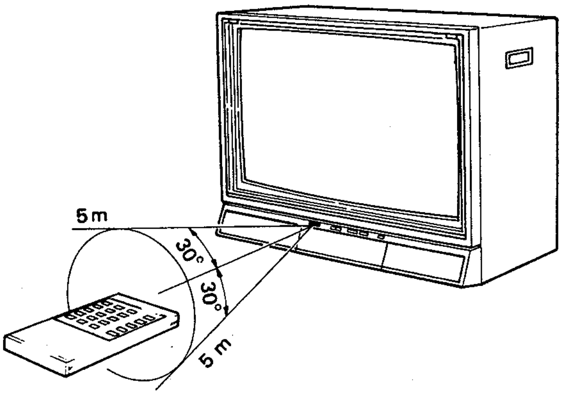
1. Press the TIMER Button.
   "TIMER 00" will appear on the screen.
2. Press the " 4/120 " Button.
3. "TIMER 120" will appear on the screen.
4. Press the TIMER Button again to make the timer operative. Display goes off. Setting completed.

Note: ● When the TIMER Button is pushed after the timer has been started, the remaining time is displayed.
● To cancel the timer operation, ① press TIMER Button ② Press RESET Button ③ Press TIMER Button.
Timer operation is also canceled by turning the power off.

## TIPS FOR REMOTE OPERATION

- If intermittent operation occurs, replace the batteries according to "INSTALLING THE BATTERIES."
  The battery life should be about a year under normal use.
- When the Remote Hand Unit is not used for a long period of time or when the batteries are worn out, take out the batteries to prevent liquid leakage.
- To prevent malfunction, depress only one button at a time.

## EFFECTIVE AREA OF THE REMOTE CONTROL HAND UNIT

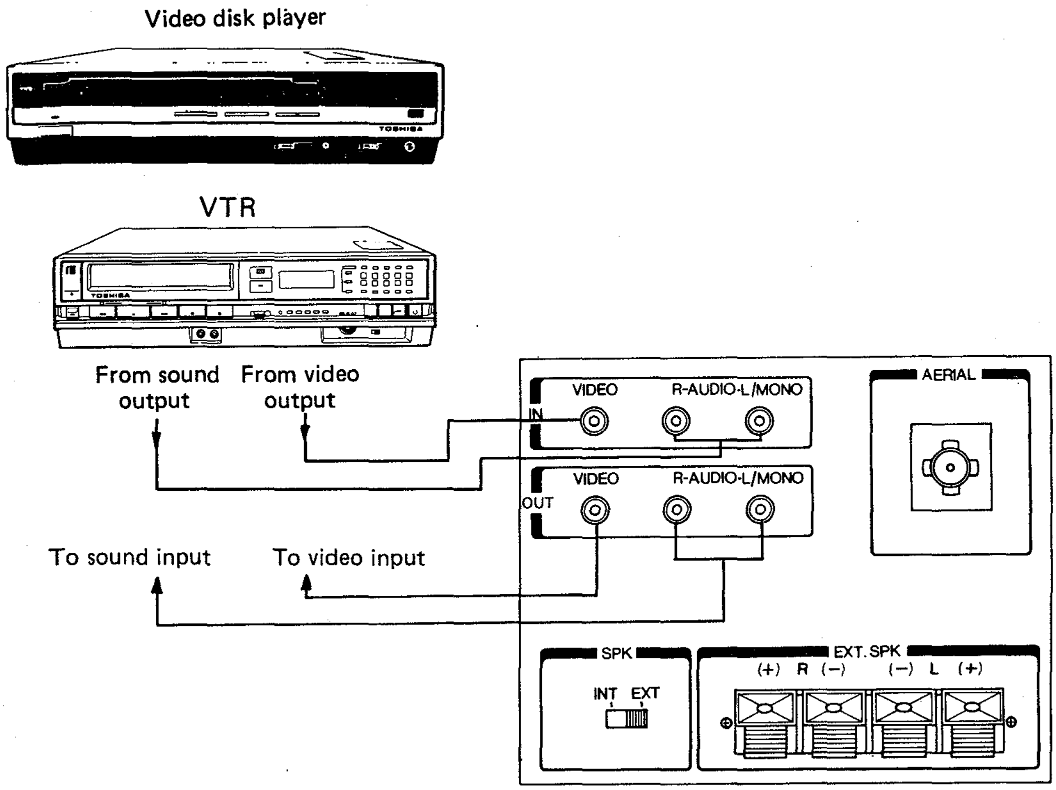


DISTANCE . . . . . 5m from the remote sensor
ANGLE . . . . . . . 30° radially from the remote sensor

# INPUT AND OUTPUT TERMINALS

## VIDEO AND AUDIO INPUT/OUTPUT TERMINALS

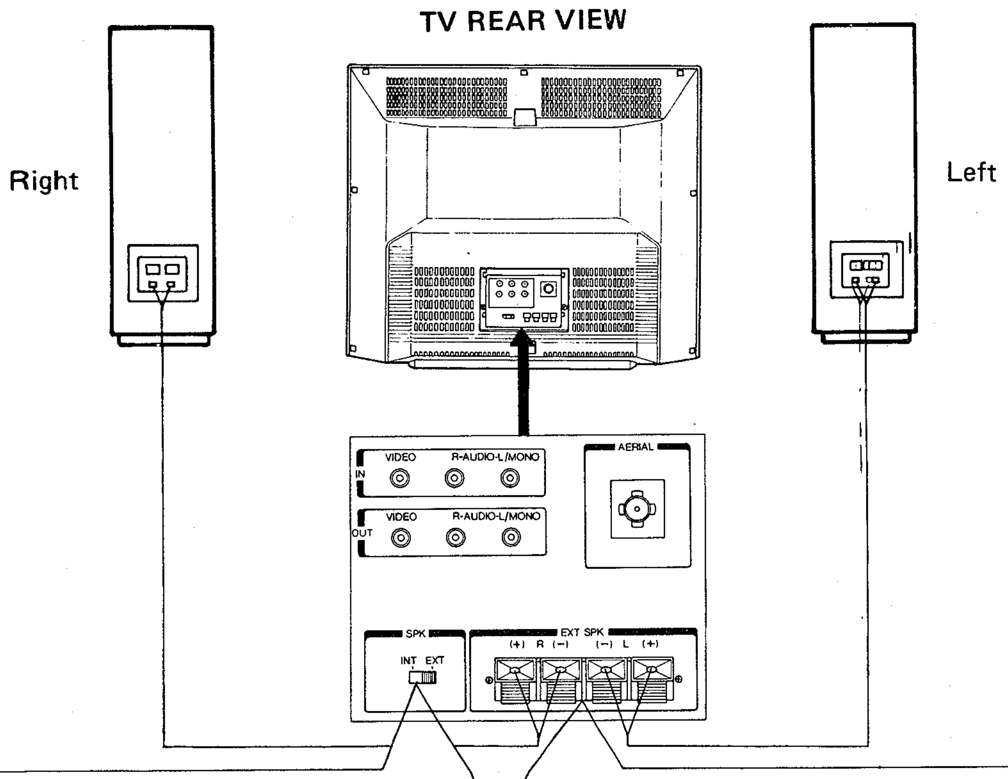
- This TV is provided with a video and audio input/output terminals, by which you can connect the TV to the video and audio equipment (VTR and video disk player, etc.).


Video disk player
VTR
From sound output
From video output
To sound input
To video input
VIDEO
R-AUDIO-L/MONO
IN
VIDEO
R-AUDIO-L/MONO
OUT
AERIAL
SPK
INT EXT
EXT.SPK
(+) R (−) (−) L (+)

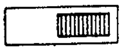
**Note:** ● When using monaural sound equipment, connect its cord to the Left/Mono jack. Identical sound will be heard from both left and right speakers.

## EXTERNAL SPEAKER TERMINALS

You can enjoy a powerful sound by connecting a HI-FI speaker system to the external speaker terminals on this TV.

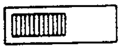


### Speaker Switch



Internal External

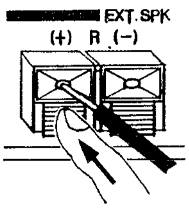
When using external speakers, switch it to the external side. The built-in speaker sound is stopped.



Internal External

When using built-in speakers, switch it to the internal side. Sound will be heard from the built-in speakers.

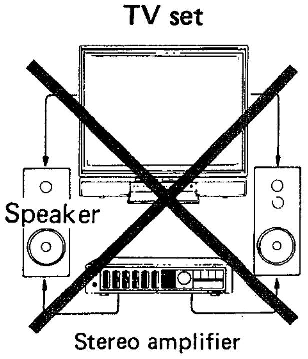
### To connect speaker leads:



1. Press to open the catch of speaker terminal and insert the wire lead.
2. Insert the left speaker's white wire in the left (+) terminal (red), and its black wire in the left (−) terminal (black).
3. Insert the right speaker's white wire in the right (+) terminal (red) and its black wire in the right (−) terminal (black).

**Note:**

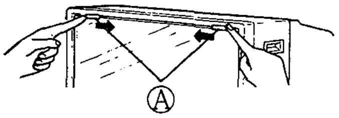
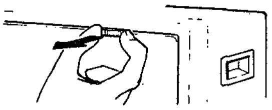
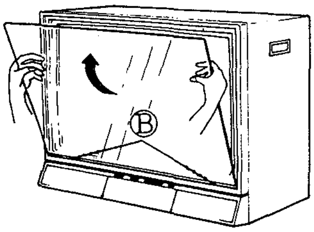
- Do not connect two sound sources to the same speakers. You may damage the amplifiers in the TV or stereo system. It may cause troubles.
- Use only external speakers with the rating of impedance 8 ohms and input power 5.5 watts or above.



- Some type speakers placed near the TV may cause color distortion because of magnetism from the speaker magnet. In such case, arrange the speaker box so that no colour distortion occurs.

## GLASS FILTER

This TV is equipped with a glass filter to conduce to comfortable viewing preventing external diffused reflection.
Dust may accumulate between picture tube and glass filter over a long period. In this case, clean the picture tube and glass filter after removing the glass filter as outlined below.

| | |
|---|---|
|  | Slide the holders (A) (on both top sides) in the arrow direction until they click. |
|  | Remove the holders by pulling them toward you, holding the glass with one hand. |
|  | Remove the glass carefully from the guide (B) by slanting it toward you. |

- When mounting the glass, follow the reverse steps of removal.
- Be careful handling the glass filter so as not to scratch or break it.
- Use a soft cloth to clean the glass and picture tube.

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION," "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

# INSTALLATION AND SERVICE ADJUSTMENTS

## GENERAL INFORMATIONS

All adjustments are thoroughly checked and corrected when the receiver leaves the factory. Therefore the receiver should operate normally and produce proper colour and B/W pictures upon installation. However, several minor adjustments may be required depending on the particular location in which the receiver is operated.

This receiver is shipped completely in cardboard carton. Carefully draw out the receiver from the carton and remove all packing materials.

Plug the power cord into a convenient 110 ~ 245 volts 50/60Hz AC two pin power outlet. Turn the receiver ON.

Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST and COLOUR Controls to obtain natural colour or B/W picture.

## AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing after moving the receiver is normally unnecessary, providing the receiver is properly degaussed upon installation. The degaussing coil operates for about 1 second after the power to the receiver is switched ON. If the set is moved or faced in a different direction, the power switch must be switched off at least 10 minutes in order that the automatic degaussing circuit operates properly.

Should the chassis or parts of the cabinet become magnetized to cause poor colour purity, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the receiver and slowly withdraw the coil to a distance of about 2 m before disconnecting it from AC source. If colour shading still persists, perform the COLOUR PURITY ADJUSTMENT and CONVERGENCE ADJUSTMENTS procedures, as mentioned later.

## RECTIFIER VOLTAGE ADJUSTMENT (R850)

1. Connect the AC plug of TV to the AC power line through the AC voltage adjuster.
   Note: Check AC line waveform for the low distortion.
2. Tune in an active channel. Adjust the BRIGHTNESS and CONTRAST controls for normal picture.
3. Set the AC input voltage for TV to 140V (rms).
4. Connect the voltmeter (DC range) to the plus lead of C810.
5. Adjust R850 until the voltage reading on the meter turns from the low voltage (185V approx.) to 350V approx.

## +115 VOLT POWER SUPPLY ADJUSTMENT (R851)

**CAUTION:** +B voltage closely relates to the high voltage. To prevent hazardous X-RAY RADIATION, the +B voltage must be properly adjusted to +115 volts.

1. Tune in an active channel. Adjust the BRIGHTNESS and CONTRAST Controls for normal picture.
2. Check that the AC power Line voltage is normal. (AC 110 ~ 245 volts, 50/60Hz).
3. Connect a VTVM between Pin13 (+115V) on POWER Board and chassis ground.
4. Adjust the +B ADJ. (R851) on POWER Board for +115 volts reading. Remove the VTVM.

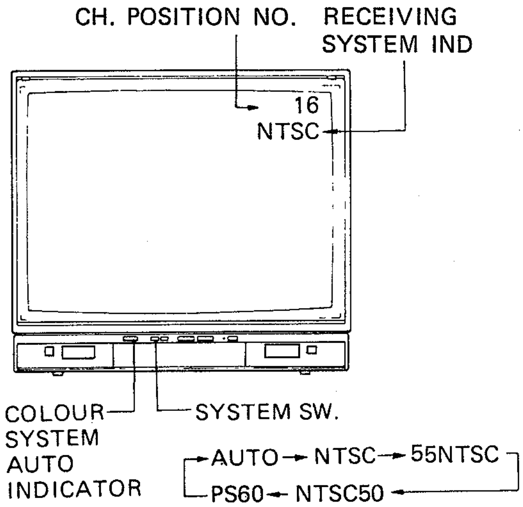
## HIGH VOLTAGE CHECK

**CAUTION:** There is no HIGH VOLTAGE ADJUSTMENT on this chassis.

1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST Controls to minimum (zero beam current).
3. High voltage will be measured below 32kV
4. Rotate the BRIGHTNESS Control to both extremes to be sure the high voltage does not exceed the limit of 32kV under any conditions.

## SYSTEM SWITCH OPERATION

This TV receiver can receive 11 systems.



| | |
|---|---|
| ●AUTO ..... | Signal of PAL B/G, SECAM B/G, PAL D/K, SECAM D/K, PAL I and 3.58 NTSC can be received.<br>(System Auto Indicator lamp is lighting. Display of system name is one of PAL, SECAM or NTSC.)<br>Note: 1. 3.58 NTSC signal can be received. U.S. CHANNEL, JAPAN CHANNEL (PHILIPPINES, KOREA)<br>2. System Auto indicator does not light when receiving B/W program at this mode. |
| ●443NTSC ... | Signal of 4.43 NTSC from VTR can be received. |
| ●55NTSC .... | Signal of 3.58/5.5M NTSC from VTR can be received. |
| ●NTSC50 .... | Signal of NTSC 50Hz from VIDEO DISK can be received. |
| ●PS60 ...... | Signal of PAL 60Hz or SECAM 60Hz from VIDEO DISK can be received. |

## HORIZONTAL OSCILLATOR ADJUSTMENT

If there is an indication of unstable horizontal sync., adjust the HORIZONTAL HOLD Control (R451) to remove the condition. Adjust the HORIZONTAL HOLD to the centre of the pull-in range.

## VERTICAL OSCILLATOR ADJUSTMENT

If the picture moves up or down on the screen, adjust the VERTICAL HOLD Control (R351) until there is a single image without vertical movement.

## HEIGHT ADJUSTMENT

HEIGHT Control (R352) on MAIN Board changes the size of the picture or pattern, having an equal effect on the top and bottom. Make final adjustment to overscan the mask 2 cm at top and bottom.

## FOCUS ADJUSTMENT

Adjust FOCUS Control on FLYBACK TRANS. (T461) for well defined scanning lines in the centre area on the screen.

## DELAYED R-F AGC ADJUSTMENT

1. Tune the set in the strongest station in your area.
2. Turn AGC DELAY Control (R151) on MAIN Board to fully counterclockwise position.
3. Adjust AGC DELAY Control clockwise until noise (snow) disappears on the screen.

## AFC (Automatic Frequency Control) FIELD ALIGNMENT

1. Tune the set to an active channel and adjust fine tuning for best picture with MFT UP, DOWN buttons.
2. To activate AFC, temporarily tune in the next active channel with SEARCH button and return to the previous channel.
3. Adjust L152 for the best tuned picture.
4. Detune to higher or lower side with MFT button. Then temporarily change to the next active channel with SEARCH button, and return to the previous channel to check for the best tuned picture.

## BELL COIL (LM51) ADJUSTMENT

1. Receive SECAM colour bar signal.
2. Connect the synchroscope to the terminal TPM-01.
3. Adjust LM51 for the flat level of amplitude in each colour bar waveform on the scope. (See figure 1.)

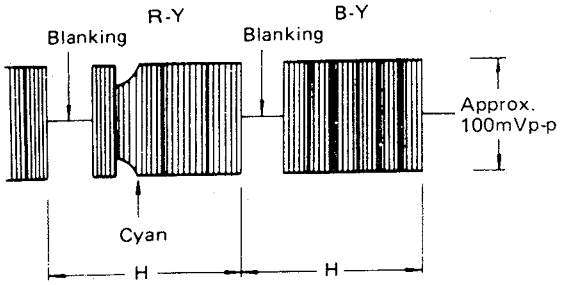


Figure 1.

## IDENT COIL (LM52) ADJUSTMENT

1. Receive SECAM colour bar signal.
2. Connect the DC voltmeter (Digital Voltmeter) to the pin 26 of ICM01.
3. Adjust LM52 for the maximum indication (approx. DC10V) on the meter.

## B-Y, R-Y DEMOD COIL (LM53, LM54) ADJUSTMENT

1. Receive SECAM colour bar signal.
2. Connect the synchroscope to the pin 22 of ICM01.
3. Adjust LM53 so that the white level in picture part reaches to the vertical retrace line. (See figure 2.)
4. Then change the connection of synchroscope from the pin 22 to the pin 18 of ICM01.
5. Adjust LM54 so that the white level in picture part reaches to the vertical retrace line. (See figure 3.)

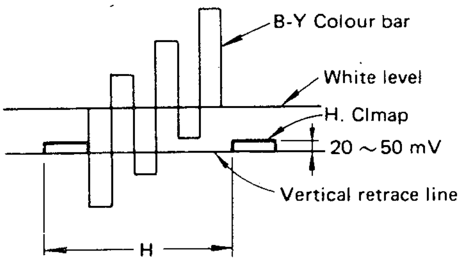


Figure 2.

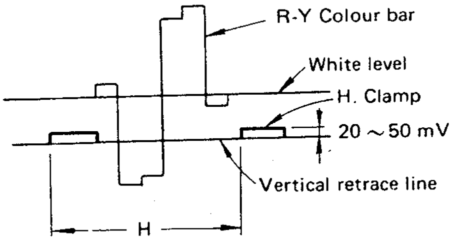


Figure 3.

## COLOUR SYNC. ADJUSTMENT (C551: 4.43MHz PAL, CN51: 3.58MHz NTSC)

### FOR 4.43MHz PAL

1. Receiver a PAL colour bar signal.
2. Connect terminal TP-43 to the earth of IC501 with the short jumper wire.
3. Connect pin 12 of IC501 to pin 2 of IC501 with a 10k ohm resistor so that the colour killer turns off.
4. Then the colour stripes appear on the screen when the adjustment is incorrect. Adjust the variable capacitor (C551) so that the colour bar pattern stands still or drifts slowly across the picture screen.
5. Remove the 10k ohm resistor.

### FOR 3.58MHz NTSC

1. Receive a NTSC 3.58MHz colour bar signal.
2. Connect terminal TP-43 to the earth of IC501 with the short jumper wire.
3. Connect pin 12 of IC501 to pin 2 of IC501 with a 10k ohm resistor so that the colour killer turns off.
4. Observing the screen, adjust the variable capacitor (CN51) so that the colour bar pattern stands still.
5. Remove the 10k ohm resistor.

### PAL MATRIX ADJUSTMENT

1. Tune in the colour programme including the colour bar signals.
2. Set the COLOUR Control VR. to obtain the proper colour.
3. If the PAL MATRIX adjustment is in correct, the Venetian Blind would appear in the colour bars area. This case needs the adjustment.
4. At the first, adjust DL PHASE ADJ. Coil (L551) to minimize the Venetian Blind.
5. Next, connect the terminal TP-43 to the earth with a capacitor (30 pF ~ 50 pF). If the Venetian Blind appears, adjust 1H-DL ADJ. VR (R551) to minimize the Blind.
6. Remove the capacitor, and if the Venetian Blind still remains, adjust 1H-DL PHASE ADJ. Coil (L551) to minimize the Blind again.
7. Adjust the BURST PHASE Coil (L552) for the maximum of output response at the base of Q509.
8. Repeat the item 5 and 6 procedures, adjust the R551 and L551 until the Blind does not appear when the capacitor is connected.
9. Adjust the BURST PHASE Coil (L552) for the maximum of output response at the base of Q509.

### SIF DET. ADJUSTMENT
### L651 FOR 6.0MHz

1. Set the system switch (S201) to the AUTO position.
2. Apply +5V DC to terminal TP-14 from an external supply through a resistor 2k ohm to deactivate PIF circuit.
3. Connect the 6.0MHz signal (Modulation: 400Hz/15kHz deviation, 100dB$\mu$) of SIF S.G. to R109 through a capacitor 0.01$\mu$F.
4. Connect the millivoltmeter to pin 23 of IC101.
5. Adjust L651 for the macimum reading on the meter.

### SIF IDENT. ADJUSTMENT 0.5MHz OSC. COIL (L672)

1. Apply the 5.5MHz signal (No modulation, 100dB$\mu$) of SIF S.G. to Base of Q671 on MAIN Board through a capacitor 0.01$\mu$F.
2. Connect a resistor 470 ohm 1/8W across Z674 and Eath on the Board,and connect the frequency connector to Z674.
3. Apply DC 12V from the external DC supply to R661 on MAIN Board.
4. Adjust the 0.5MHz OSC coil (L672) for the 6.0MHz reading on the counter.

Note: Do not connect any lead (something like a probe) to emitter of Q675.

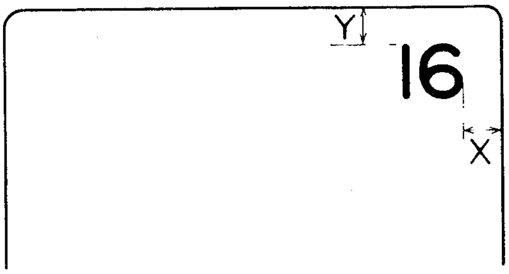
### CN52 FOR 4.5MHz

1. Set the system switch (S201) to the 3.58 NTSC position.
2. Apply +5V DC to terminal TP-14 from an external supply through a resistor 2k ohm to deactivate PIF circuit.
3. Connect the 4.5MHz signal (Modulation: 400Hz/7.5kHz deviation, 100dB$\mu$) of SIF S.G. to R109 through a capacitor 0.01$\mu$F.
4. Connect the millivoltmeter to pin 23 of IC101.
5. Adjust the variable capacitor (CN52) for the maximum reading on the meter.

### CHARACTER DISPLAY ADJUSTMENT (CB04)

- **5MHz Oscillator**

1. Tune in an active channel.
2. Short both leads of RB06 with a short jumper.
3. Connect frequency counter to pin 11 of ICB01.
4. Adjust CB04 for 5MHz reading on the counter.
5. Remove the short jumper.
6. After the above adjustment, check the character display for the regular position as in the figure.



X ........... 52 mm

Y ........... 30 mm

### COLOUR PURITY ADJUSTMENT

**Note:** Before attempting any purity adjustments, the receiver should be operated for at least fifteen minutes.

1. Demagnetize the picture tube and cabinet using a degaussing coil.
2. Turn the CONTRAST and BRIGHTNESS Controls to maximum.
3. Adjust RED and BLUE CUT OFF controls (R557 and R559) to provide only a green raster. Advance the GREEN CUT OFF Control (R558) if necessary.
4. Loosen the clamp screw holding the yoke, and slide the yoke backward or forward to provide vertical green belt (zone) in the picture screen.
5. Remove the Rubber Wedges.
6. Rotate and spread the tabs of the purity magnet (See figure 7) around the neck of the picture tube until a green belt is obtained in the centre of the screen. And at the same time, centre the raster vertically by adjusting the magnet.
7. Move the yoke slowly forward or backward until a uniform green screen is obtained. Tighten the clamp screw.
8. Check the purity of the red and blue raster by adjusting the CUT OFF Controls.
9. Tighten the clamp screw of the yoke temporarily.
10. Obtain a white raster; referring to "CRT GREY SCALE ADJUSTMENT".
11. Proceed with convergence adjustment.

## CRT GREY SCALE ADJUSTMENT

1. Tune in an active channel.
2. Set the COLOUR Control to minimum.
3. Turn the SCREEN Control (on T461) fully counterclockwise.
4. By rotating the RED, GREEN and BLUE CUT OFF Controls (R557, R558, R559) clockwise from the minimum, set them to the mid position. (90° position 14" model).
5. Set the GREEN and BLUE DRIVE Controls (R252, R253) to the mid position.
6. Disconnect the RASTER TIP.
7. Short temporarily terminals Ⓙ and Ⓗ on the MAIN Board with a jumper wire.
8. Rotate the SCREEN Control gradually clockwise until the first line appears slightly on the screen. Then turn fully counterclockwise the two CUT OFF Controls corresponding to the colours of the first and the second horizontal lines to eliminate the lines.
9. Rotate the SCREEN Control gradually clockwise until the first horizontal line of a colour (RED, GREEN or BLUE) appears slightly on the screen.
   Set the SCREEN Control to this position.
   At the base of the colour, rotate the remaining two CUT OFF Controls gradually clockwise until the horizontal lines of each colour appear slightly on the screen.
   Adjust the CUT OFF Controls to obtain the slightly lighted horizontal lines in the same levels of three colours (RED, GREEN and BLUE).
   The lines may look like white if the CUT OFF Controls are adjusted properly.
10. Remove a jumper wire between terminal Ⓙ and Ⓗ and reconnect the RASTER TIP.
11. Rotate the BRIGHTNESS and CONTRAST Controls to the maximum.
12. Adjust the BLUE and GREEN DRIVE Controls (R252/R253) to obtain proper white-balanced picture in high light areas.
13. Rotate the BRIGHTNESS and CONTRAST Controls to obtain dark grey raster. Then check the white balance in low brightness. If the white balance is not proper, retouch the CUT OFF Controls and DRIVE Controls to obtain a good white balance in both low and high light areas.

## SUB-BRIGHTNESS ADJUSTMENT

1. Tune in a colour programme.
2. Set the CONTRAST Control to the maximum and the BRIGHTNESS Control to the centre.
3. Set the COLOUR Control to the centre.
4. Set the SUB-BRIGHT. Control (R255) to the centre and leave the receiver for five minutes in this state.
5. Watching the picture well, adjust the SUB-BRIGHT. Control in the position where the picture does not show evidence of blooming in high bright area and not appear too dark in low bright portion.
6. Check the proper picture variation by rotating the CONTRAST and BRIGHTNESS Controls to both extremes.
7. If the picture does not appear dark with the CONTRAST and BRIGHTNESS Controls turned to the minimum, or not appear bright with the controls turned to the maximum, adjust the SUB-BRIGHT. Control again for the acceptable picture.

## CONVERGENCE ADJUSTMENTS

**Note:** Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

### ■ Centre Convergence Adjustment

1. Receive crosshatch pattern with a colour bar signal generator.
2. Adjust the BRIGHTNESS and CONTRAST Controls for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (See figure 7.) and superimpose red and blue vertical lines in the centre area of the picture screen. (See figure 8.)
4. Turn the both tabs at the same time keeping the constant angle to superimpose red and blue horizontal lines at the centre of the screen. (See figure 8.)
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line and green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3, 4, 5 with understanding red, green and blue movement, because 4-Pole Magnets and 6-Pole Magnets have mutual affection and it makes dots movement complex.

### ■ Circumference Convergence Adjustment

1. Loosen the clamping screw of deflection yoke to allow the yoke to tilt.
2. Put a wedge as shown in figure 6 temporarily. (Do not remove cover paper on adhesive part of the wedge.)
3. Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See figure 8.) Push the mounted wedge into the space between picture tube and the yoke to fix the yoke temporarily.
4. Put other wedge into bottom space and remove the cover paper to stick.
5. Tilt front of the yoke right or left to obtain better convergence in circumference. (See figure 8.)
6. Keep the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to fix the yoke.
7. Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
8. After fixing three wedges, recheck overall convergence. Tighten the screw firmly to fix the yoke and check the yoke is firm.
9. Stick 3 adhesive tapes on wedges.

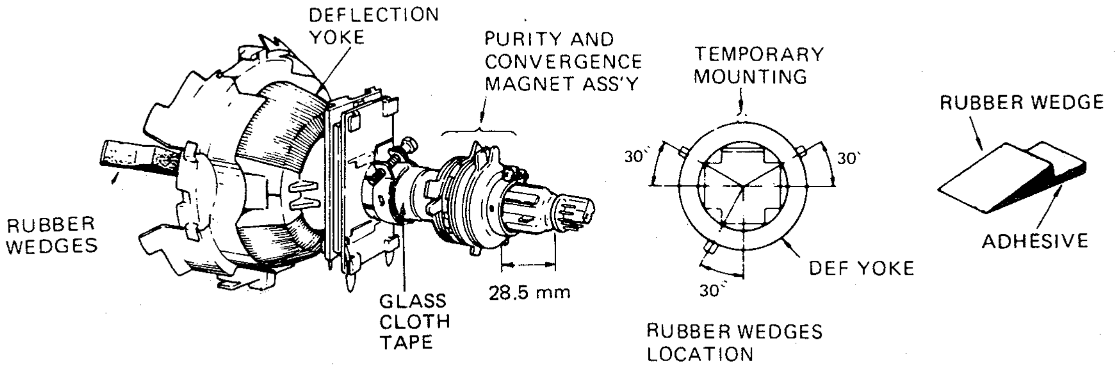
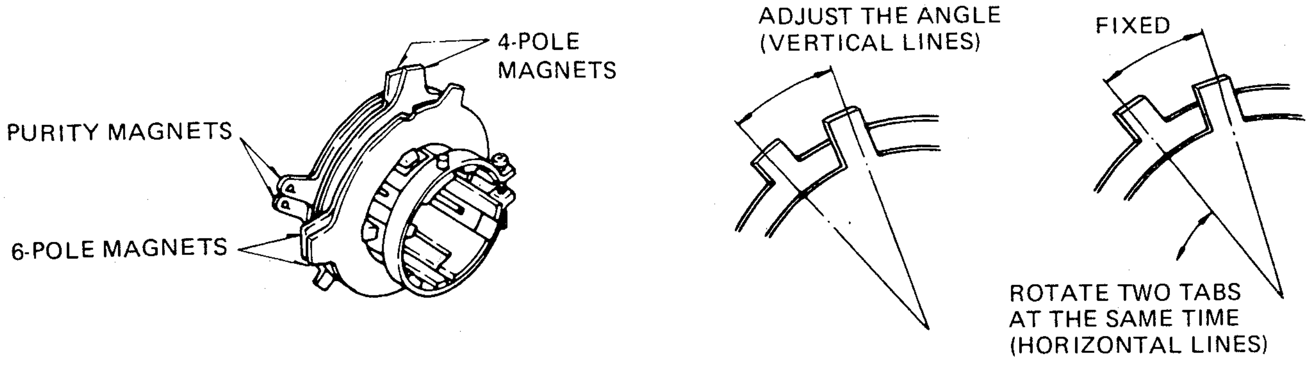

DEFLECTION YOKE
PURITY AND CONVERGENCE MAGNET ASS'Y
TEMPORARY MOUNTING
RUBBER WEDGE
30°
30°
RUBBER WEDGES
ADHESIVE
DEF YOKE
30°
GLASS CLOTH TAPE
28.5 mm
RUBBER WEDGES LOCATION

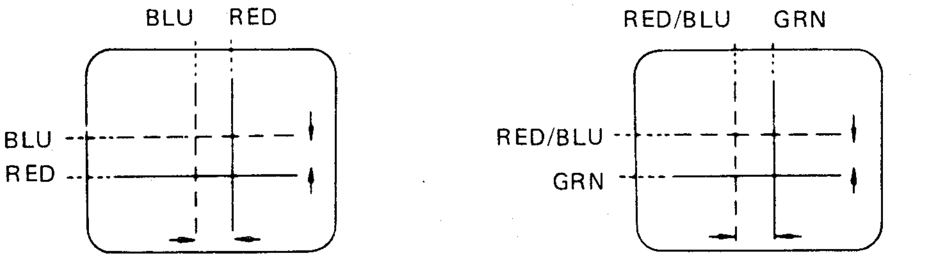
**Figure 6.**


4-POLE MAGNETS
PURITY MAGNETS
6-POLE MAGNETS
ADJUST THE ANGLE (VERTICAL LINES)
FIXED
ROTATE TWO TABS AT THE SAME TIME (HORIZONTAL LINES)

CONVERGENCE MAGNET ASSEMBLY

ADJUSTMENT OF MAGNETS

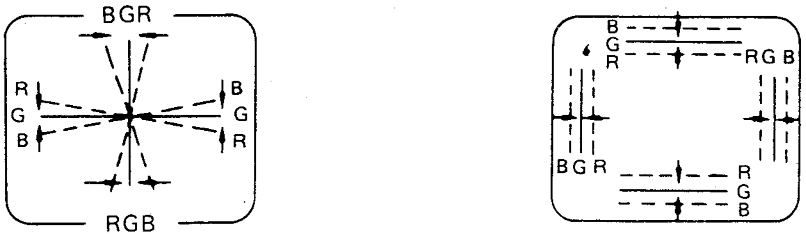
**Figure 7.**


BLU
RED
BLU
RED
RED/BLU
GRN
RED/BLU
GRN

4-POLE MAGNETS MOVEMENT

6-POLE MAGNETS MOVEMENT

Center Convergence by Convergence Magnets


BGR
R
G
B
B
G
R
RGB
B
G
R
RG B
BG R
R
G
B

INCLINE THE YOKE UP (OR DOWN)

INCLINE THE YOKE RIGHT (OR LEFT)

Circumference Convergence by DEF Yoke

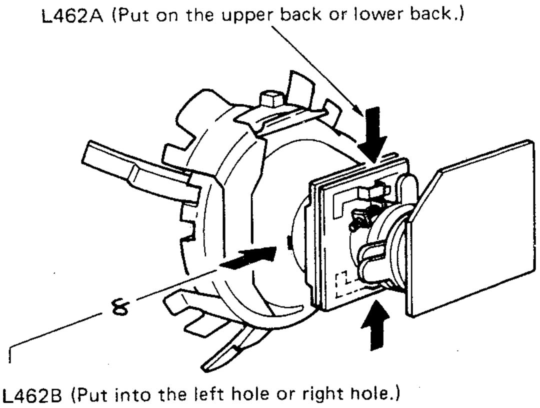
**Figure 8. Dot Movement Pattern**

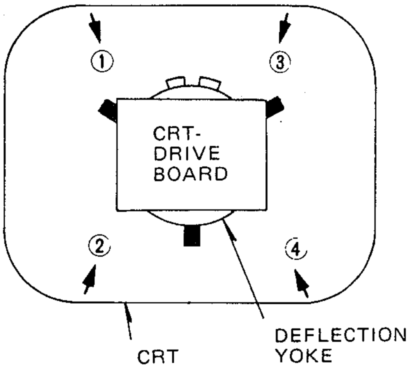
## CONVERGENCE COMPENSATOR

Compensators L462A and L462B are used to correct misconvergence (Red-Gree) at the top center or bottom center on screen, when the misconvergence is still evident even though the yoke adjustment is tried.

Compensator L462C is also used to correct misconvergence (Vertical shift of Red or Blue) at four corners on screen.

1. To correct horizontal misconvergence (Red-Green), put compensator L462A on the yoke back (see figure right) to find a position for minimizing misconvergence. Mark the position and remove protective paper on the rear of L462A to stick it in place. Apply adhesives on both of yoke and L462A.
2. To correct vertical misconvergence (Red-Green), put the tips of compensator L462B into either of holes on the yoke core and apply adhesives.
3. To correct up or down shift of Red at top right or bottom right corner, put compensator L462C at the point ① or ② on the picture tube (see figure right.) to find a position for minimizing misconvergence.
   Mark the position and remove protective paper on the rear of L462C to stick it in place.
4. To correct up or down shift of Blue at top left or bottom left corner, put compensator L462C at the point ③ or ④ on the picture tube (see figure right.) to find a position for minimizing misconvergence.
   Mark the position and remove protective paper on the rear of L462C to stick it in place.


L462A (Put on the upper back or lower back.)
L462B (Put into the left hole or right hole.)



# PICTURE I-F SWEEP ALIGNMENT

| | |
|---|---|
| GENERAL | Refer to figures 15 and 9 for test equipment connection and alignment points. |
| PRELIMINARY STEPS | 1. Disconnect the solder link (Tuner IF) on the foil side of Main Board.<br>2. Supply +12V DC to Main Board<br>3. Supply +3 volt bias to terminal "TP-14" on Main Board through 100 ohm resistor.<br>4. Turn AGC DELAY Control (R151) on Main Board fully clockwise. |
| SWEEP/MARKER GENERATOR | Connect to the solder link (R161 side of tuner IF).<br>Tune to 25 ~ 45 MHz sweep. |
| OSCILLOSCOPE | Connect with direct probe to terminal "TP-12" on Main Board through 100k ohm resistor. |

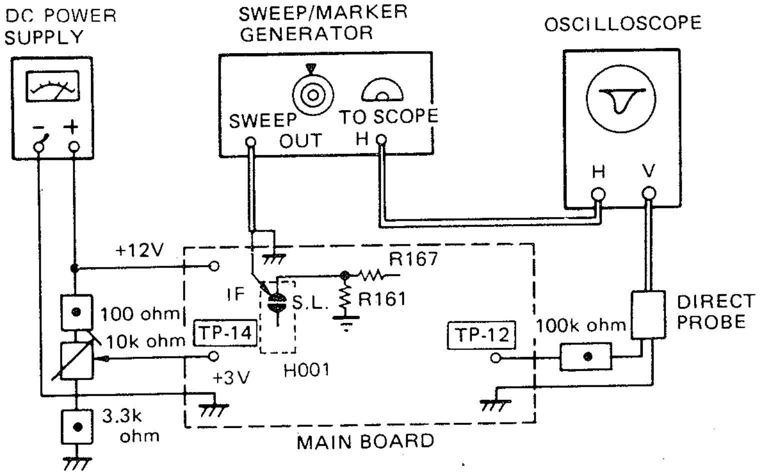

DC POWER SUPPLY
SWEEP/MARKER GENERATOR
OSCILLOSCOPE
SWEEP OUT
TO SCOPE H
H
V
+12V
IF
R167
S.L.
R161
100 ohm
10k ohm
TP-14
TP-12
100k ohm
DIRECT PROBE
+3V
H001
3.3k ohm
MAIN BOARD

Figure 9. Picture I-F Sweep Alignment

| STEP | SWEEP/MARKER GENERATOR | ADJUST | REMARKS |
|---|---|---|---|
| **L151 ALIGNMENT**<br>Set Oscilloscope gain for 0.5V/cm. Adjust sweep output for easy alignment. (See figure 10.) | | | |
| Detector Coil | 38.9 MHz Marker "ON" | L151 | Adjust L151 for maximum gain at 38.9 MHz on SCOPE. (See figure 10.) |
| After completing the above steps, disconnect equipment and adjust the AGC DELAY Control (R151) following DELAYED R-F AGC ADJUSTMENT on page 9. | | | |
| TN01 4.5MHz/TN02 6.0MHz TRAP ALIGNMENT<br>Set Oscilloscope gain for 4mV/cm. Adjust sweep output for easy alignment (See figure 11.) | | | |
| 4.5MHz Trap Coil<br>6.0MHz Trap Coil | 34.4MHz Marker "ON"<br>32.9MHz Marker "ON" | TN01<br>TN02 | 1. Ground CN07 to make the set NTSC 3.58 system.<br>2. Connect collector of Q161 to oscilloscope through detector in figure 12.<br>3. Connect 34.4/32.9MHz Marker to oscilloscope and repeat adjustment with TN01/TN02 so that each frequency is minimum. |

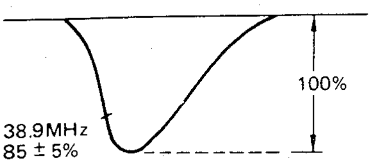


Figure 10.

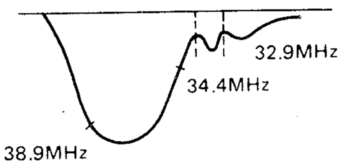


Figure 11.

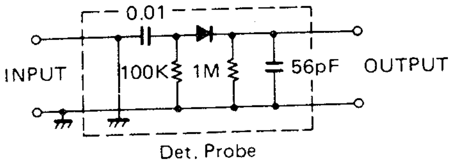

0.01
INPUT
100K
1M
56pF
OUTPUT
Det. Probe

Figure 12.

# AFC ALIGNMENT

| | |
|---|---|
| GENERAL | Refer to figures 15 and 13 for test equipments connection and alignment points. |
| PRELIMINARY STEPS | 1. Unsolder the solder links ⓐ and ⓑ shown in the figure below.<br>2. Follow the same steps as given under PICTURE I-F SWEEP ALIGNMENT on page 17. |
| SWEEP/MARKER GENERATOR | Connect to the solder link (R161 side of tuner IF) on the foil side of Main Board.<br>Tune to 25 ~ 45MHz sweep. |
| OSCILLOSCOPE | Connect direct probe to terminal 3 of R152 on Main Board. |

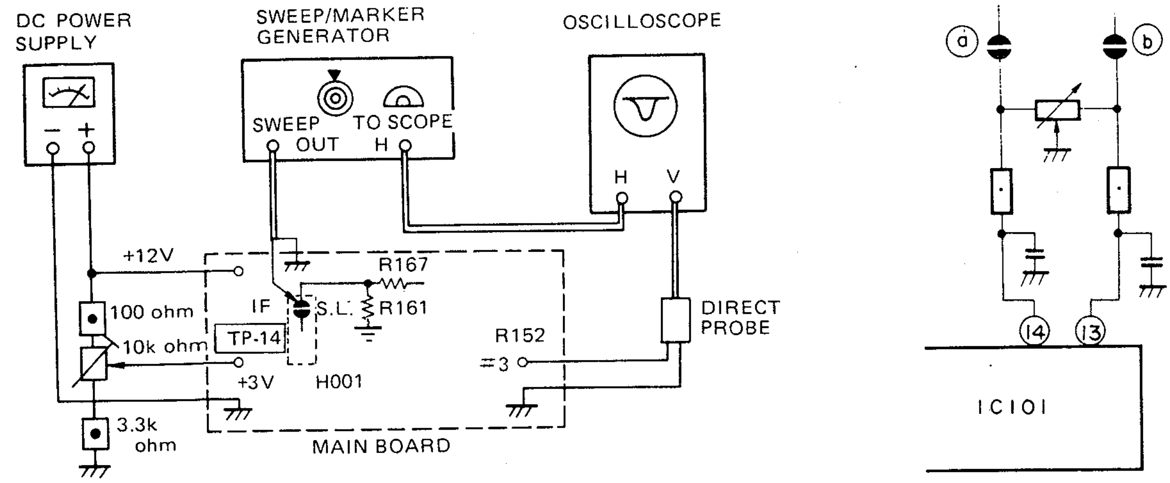

DC POWER SUPPLY
SWEEP/MARKER GENERATOR
SWEEP OUT
TO SCOPE H
OSCILLOSCOPE
H
V
+12V
100 ohm
10k ohm
3.3k ohm
IF
TP-14
S.L.
R167
R161
R152
3
+3V
H001
MAIN BOARD
DIRECT PROBE
a
b
14
13
IC101

Figure 13. AFC Alignment

| STEP | SWEEP/MARKER GENERATOR | ADJUST | REMARKS |
|---|---|---|---|
| 1. AFC Balance | NO SIGNAL | R152 | Connect the ground side of VTVM to the terminal 3 and hot side to terminal 1 of R152 on the Main Board.<br>Adjust R152 (BALANCE ADJUST) for 0.3 volt reading on meter. |
| 2. Primary fo | 38.9MHz | L152 | Remove the VTVM, Connect Direct Probe to Terminal 3 of R152 on Main Board.<br>Adjust L152 for the response shown in figure 14. |
| After completing above steps, resolder the solder links and disconnect the equipments. | | | |

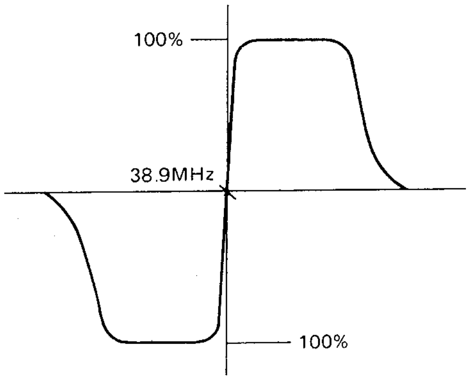


Figure 14. AFC Response

# CHASSIS TOP VIEW

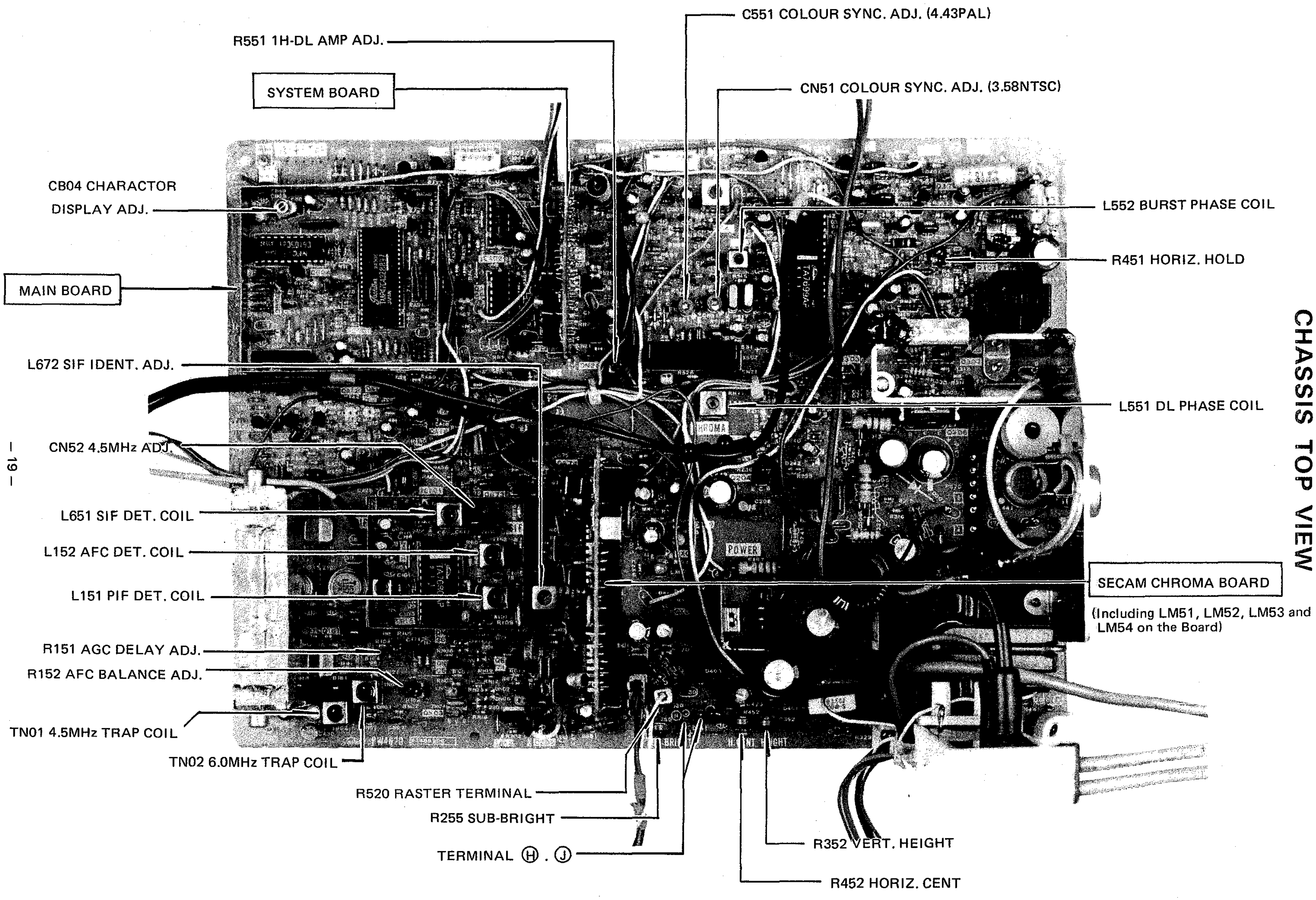

C551 COLOUR SYNC. ADJ. (4.43PAL)
R551 1H-DL AMP ADJ.
SYSTEM BOARD
CN51 COLOUR SYNC. ADJ. (3.58NTSC)
CB04 CHARACTOR DISPLAY ADJ.
L552 BURST PHASE COIL
R451 HORIZ. HOLD
MAIN BOARD
L672 SIF IDENT. ADJ.
L551 DL PHASE COIL
CN52 4.5MHz ADJ.
L651 SIF DET. COIL
L152 AFC DET. COIL
SECAM CHROMA BOARD
(Including LM51, LM52, LM53 and LM54 on the Board)
L151 PIF DET. COIL
R151 AGC DELAY ADJ.
R152 AFC BALANCE ADJ.
TN01 4.5MHz TRAP COIL
TN02 6.0MHz TRAP COIL
R520 RASTER TERMINAL
R255 SUB-BRIGHT
TERMINAL Ⓗ . Ⓙ
R352 VERT. HEIGHT
R452 HORIZ. CENT
TA7699AP
POWER
CHROMA

Figure 15. Chassis Top View

# CHASSIS REAR VIEW

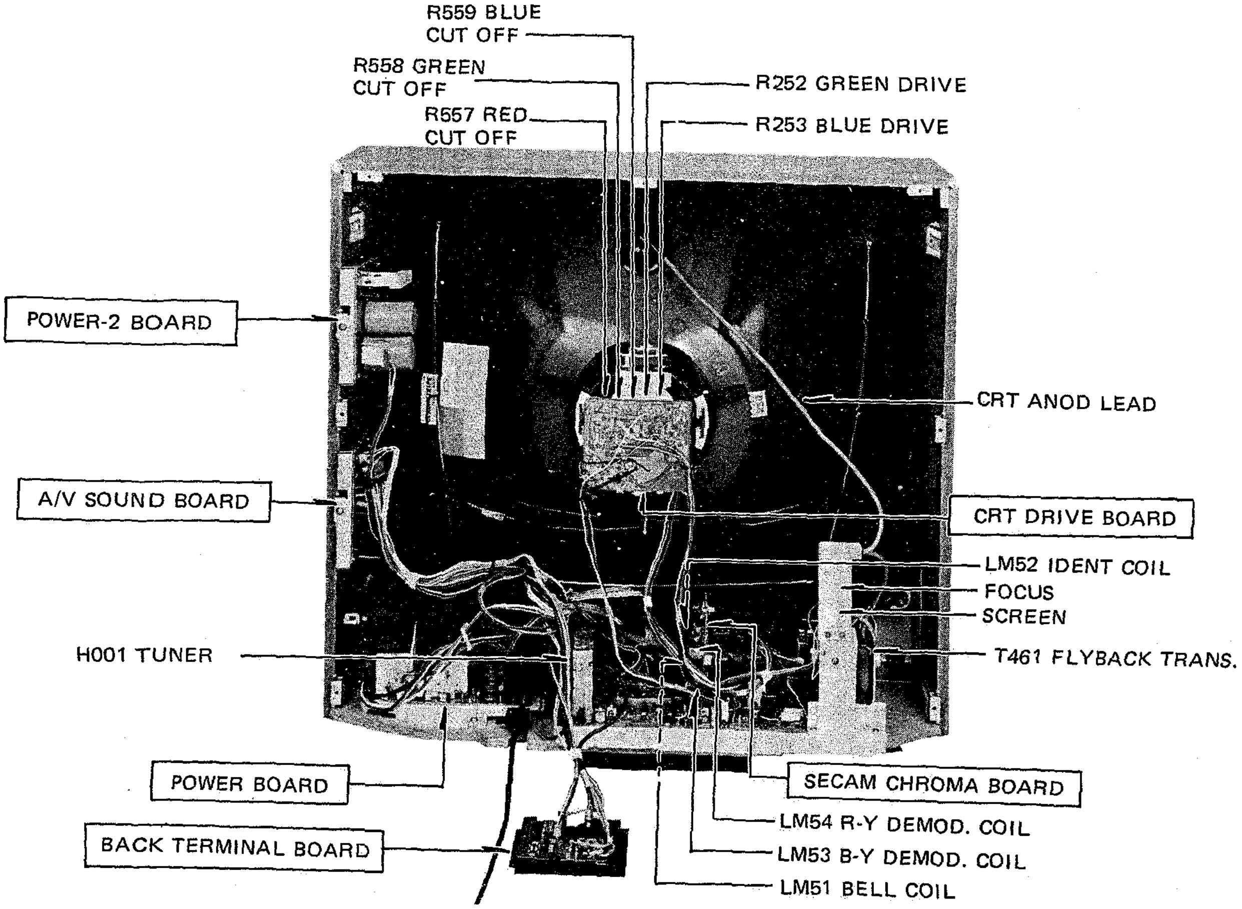

R559 BLUE CUT OFF
R558 GREEN CUT OFF
R557 RED CUT OFF
R252 GREEN DRIVE
R253 BLUE DRIVE
POWER-2 BOARD
CRT ANOD LEAD
A/V SOUND BOARD
CRT DRIVE BOARD
LM52 IDENT COIL
FOCUS
SCREEN
H001 TUNER
T461 FLYBACK TRANS.
POWER BOARD
SECAM CHROMA BOARD
BACK TERMINAL BOARD
LM54 R-Y DEMOD. COIL
LM53 B-Y DEMOD. COIL
LM51 BELL COIL

Figure 16. Chassis Rear View

# P.C. BOARD TOP VIEWS

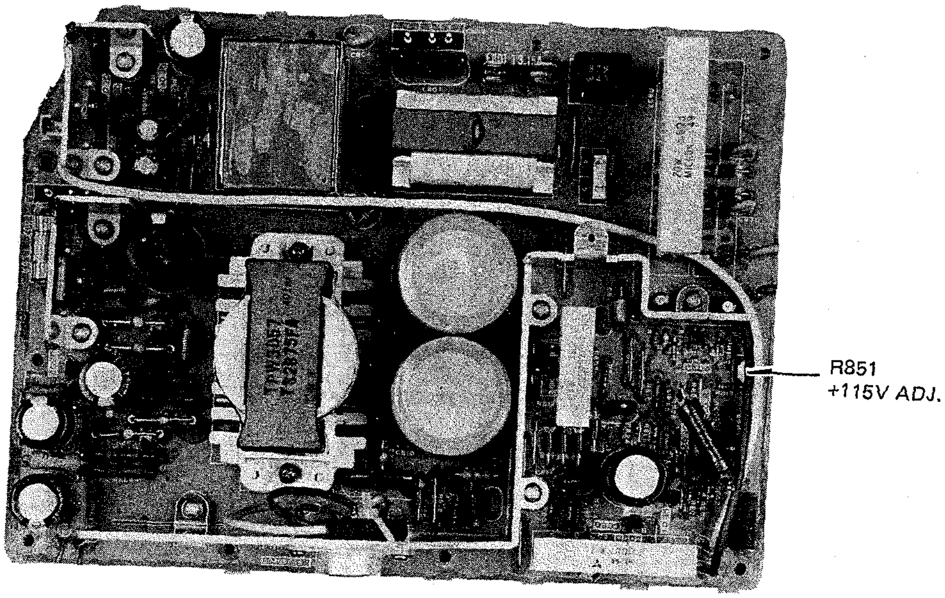

R851
+115V ADJ.

Figure 17. POWER BOARD

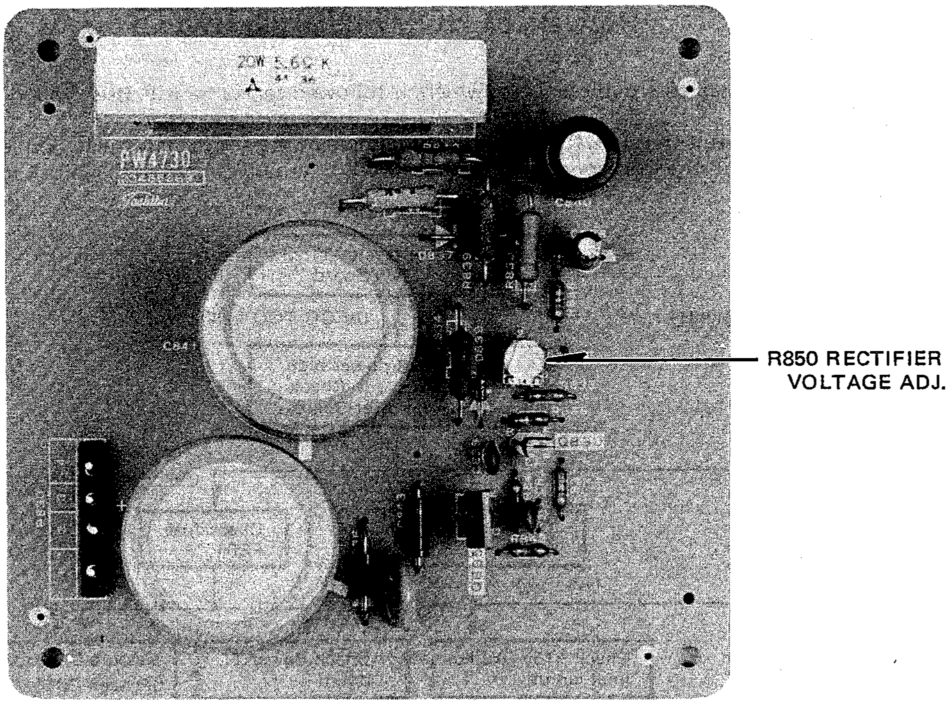

20W 5.6Ω K
PW4730
R850 RECTIFIER VOLTAGE ADJ.

Figure 18. POWER-2 BOARD

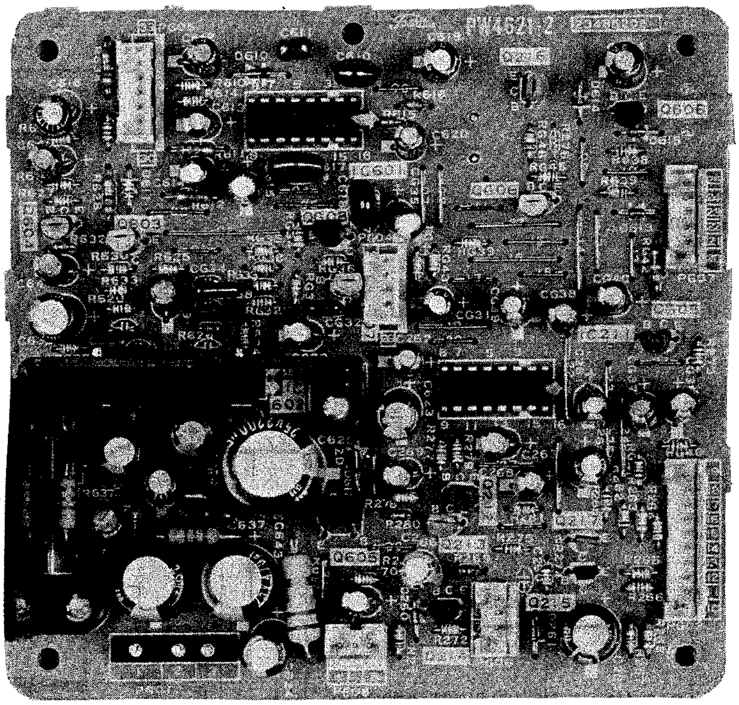
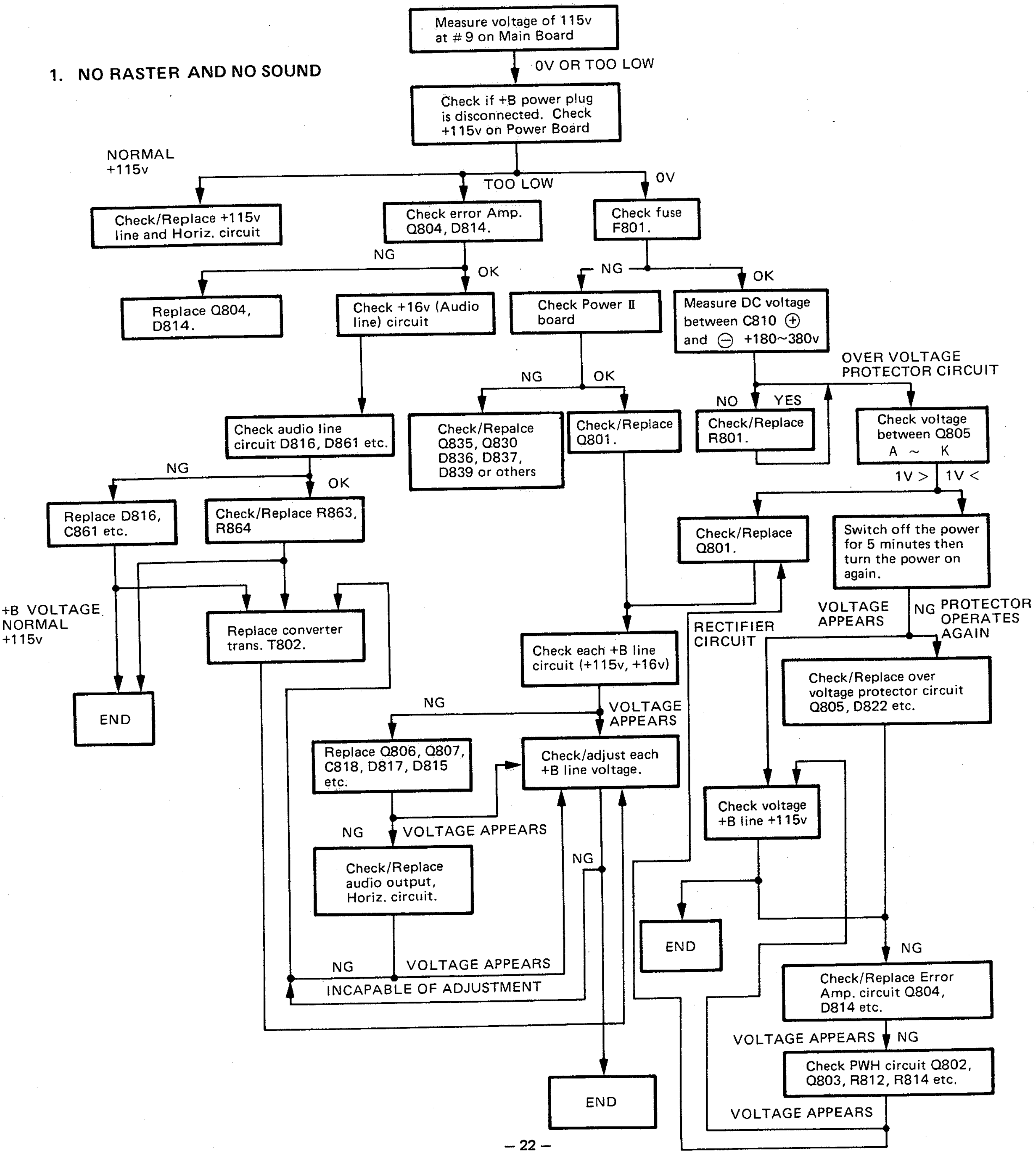


Figure 19. A/V SOUND BOARD

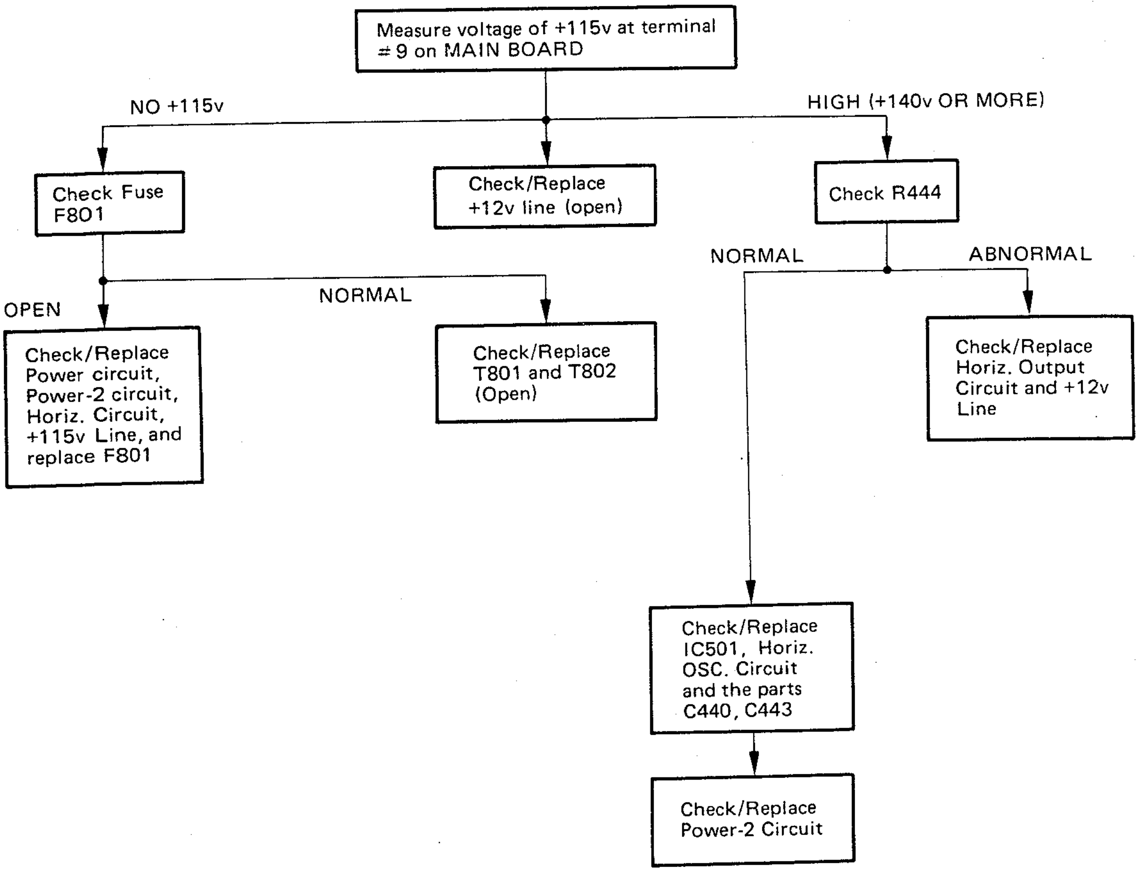
# TROUBLESHOOTING CHARTS

The following charts are devoted to troubleshooting which, if followed carefully, will assist you in tracking down a fault to the correct stage.
In order to utilize the charts (fault trees), firstly establish the complaint, i.e. – No Raster, No Sound.
Locate the chart applicable and then progress through the various alternatives until a final block indicates the offending components or stage.

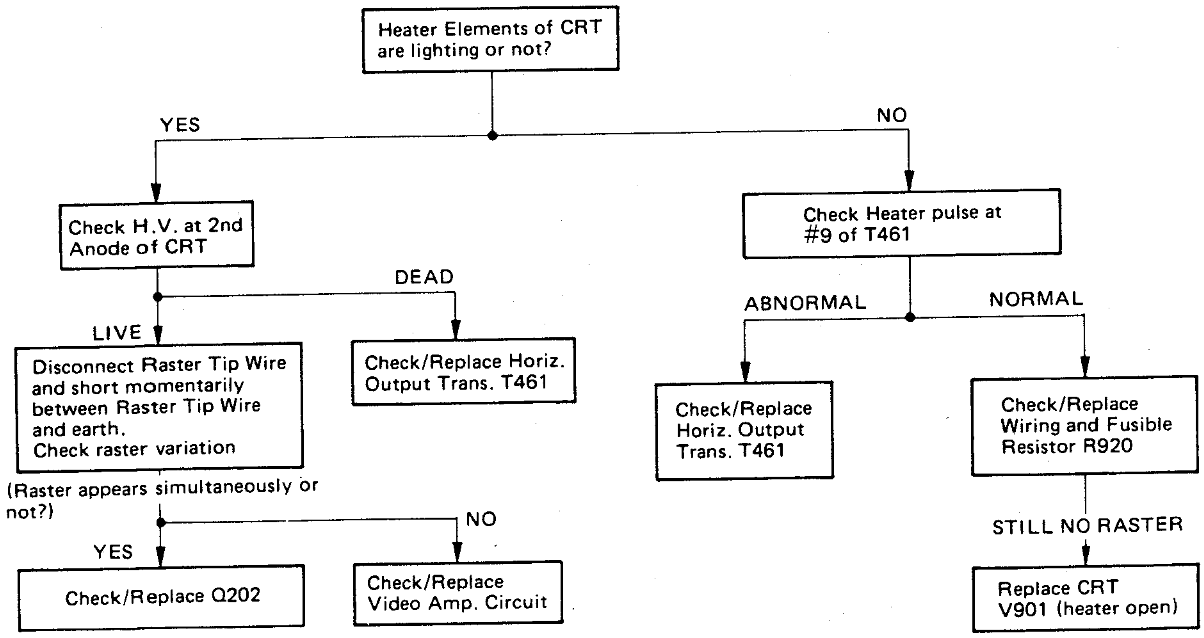
## 1. NO RASTER AND NO SOUND


Measure voltage of 115v at # 9 on Main Board
0V OR TOO LOW
Check if +B power plug is disconnected. Check +115v on Power Board
NORMAL +115v
TOO LOW
0V
Check/Replace +115v line and Horiz. circuit
Check error Amp. Q804, D814.
Check fuse F801.
NG
OK
Replace Q804, D814.
Check +16v (Audio line) circuit
NG
OK
Check Power II board
Measure DC voltage between C810 ⊕ and ⊖ +180~380v
OVER VOLTAGE PROTECTOR CIRCUIT
NG
OK
NO
YES
Check audio line circuit D816, D861 etc.
Check/Repalce Q835, Q830 D836, D837, D839 or others
Check/Replace Q801.
Check/Replace R801.
Check voltage between Q805 A ~ K
1V >
1V <
NG
OK
Replace D816, C861 etc.
Check/Replace R863, R864
Check/Replace Q801.
Switch off the power for 5 minutes then turn the power on again.
+B VOLTAGE NORMAL +115v
Replace converter trans. T802.
RECTIFIER CIRCUIT
VOLTAGE APPEARS
NG
PROTECTOR OPERATES AGAIN
Check each +B line circuit (+115v, +16v)
END
NG
VOLTAGE APPEARS
Check/Replace over voltage protector circuit Q805, D822 etc.
Replace Q806, Q807, C818, D817, D815 etc.
Check/adjust each +B line voltage.
NG
VOLTAGE APPEARS
Check voltage +B line +115v
Check/Replace audio output, Horiz. circuit.
NG
END
NG
NG
VOLTAGE APPEARS
INCAPABLE OF ADJUSTMENT
Check/Replace Error Amp. circuit Q804, D814 etc.
VOLTAGE APPEARS
NG
Check PWH circuit Q802, Q803, R812, R814 etc.
END
VOLTAGE APPEARS

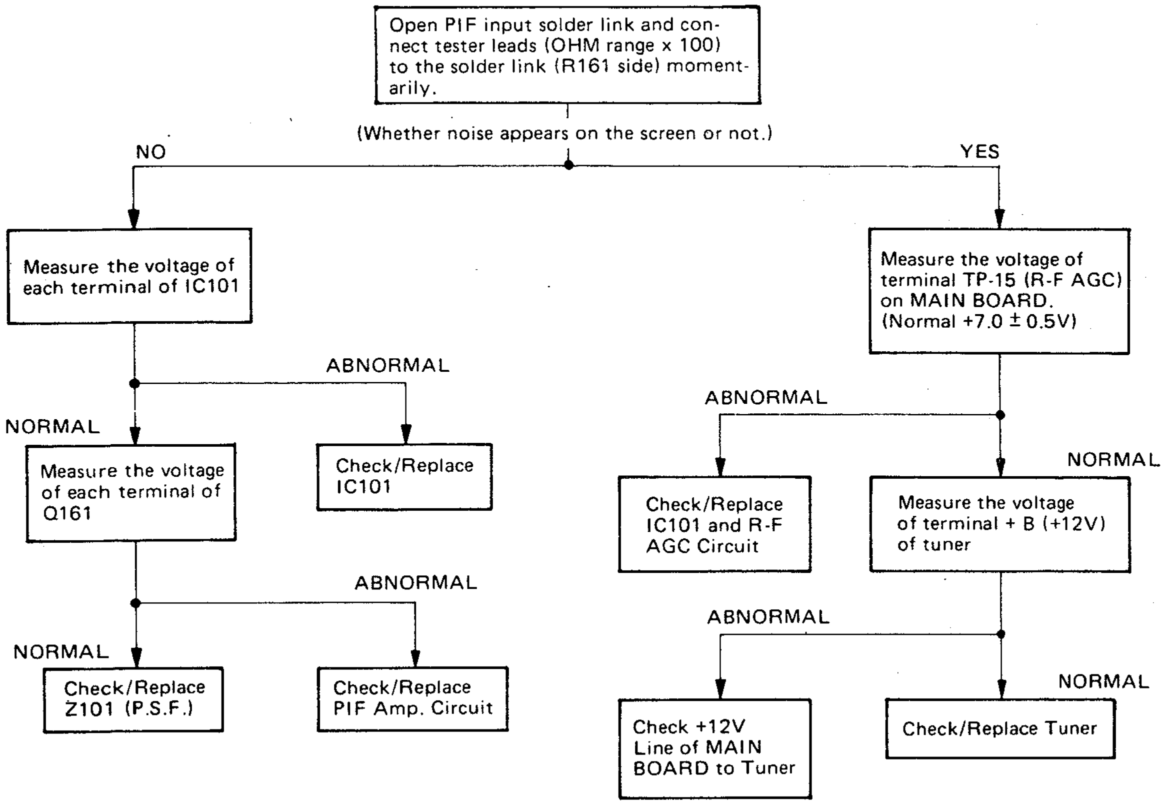
## 2. NO RASTER (NOISE OR WEAK SOUND)


Measure voltage of +115v at terminal ≠9 on MAIN BOARD
NO +115v
HIGH (+140v OR MORE)
Check Fuse F801
Check/Replace +12v line (open)
Check R444
OPEN
NORMAL
Check/Replace Power circuit, Power-2 circuit, Horiz. Circuit, +115v Line, and replace F801
Check/Replace T801 and T802 (Open)
NORMAL
ABNORMAL
Check/Replace Horiz. Output Circuit and +12v Line
Check/Replace IC501, Horiz. OSC. Circuit and the parts C440, C443
Check/Replace Power-2 Circuit

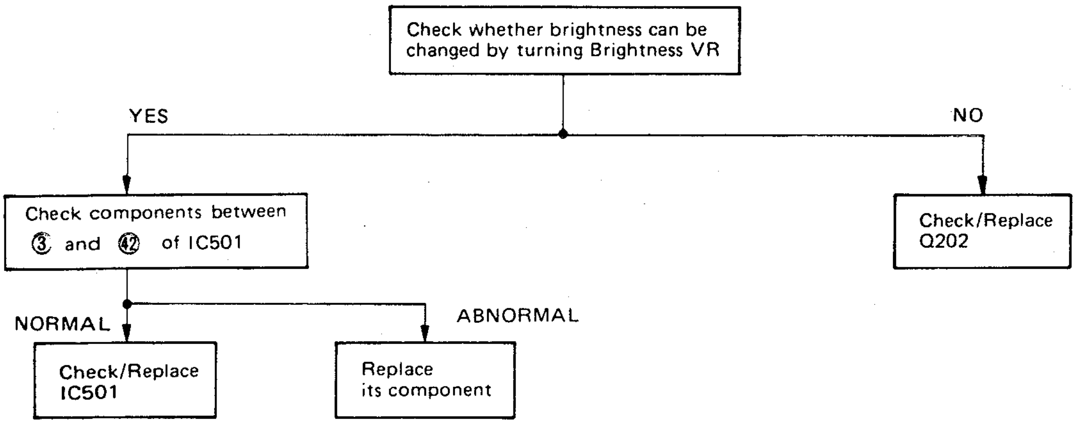
## 3. NO RASTER (SOUND OK)


Heater Elements of CRT are lighting or not?
YES
NO
Check H.V. at 2nd Anode of CRT
Check Heater pulse at #9 of T461
DEAD
LIVE
Disconnect Raster Tip Wire and short momentarily between Raster Tip Wire and earth. Check raster variation
Check/Replace Horiz. Output Trans. T461
ABNORMAL
NORMAL
Check/Replace Horiz. Output Trans. T461
Check/Replace Wiring and Fusible Resistor R920
(Raster appears simultaneously or not?)
YES
NO
Check/Replace Q202
Check/Replace Video Amp. Circuit
STILL NO RASTER
Replace CRT V901 (heater open)

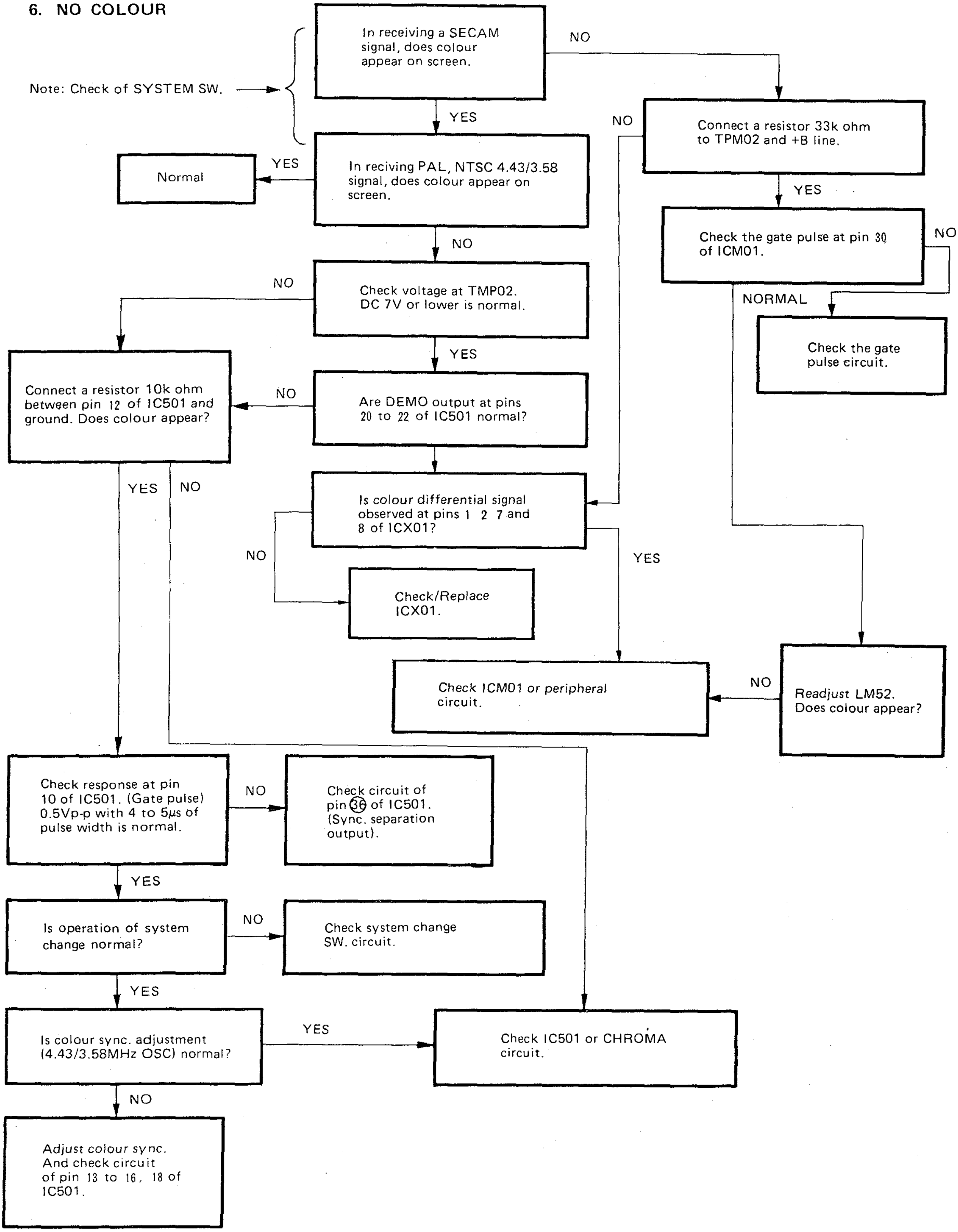
## 4. NO PICTURE (RASTER REMAIN) AND NO SOUND


Open PIF input solder link and connect tester leads (OHM range x 100) to the solder link (R161 side) momentarily.
(Whether noise appears on the screen or not.)
NO
YES
Measure the voltage of each terminal of IC101
ABNORMAL
NORMAL
Measure the voltage of each terminal of Q161
Check/Replace IC101
ABNORMAL
NORMAL
Check/Replace Z101 (P.S.F.)
Check/Replace PIF Amp. Circuit
Measure the voltage of terminal TP-15 (R-F AGC) on MAIN BOARD. (Normal +7.0 ± 0.5V)
ABNORMAL
NORMAL
Check/Replace IC101 and R-F AGC Circuit
Measure the voltage of terminal + B (+12V) of tuner
ABNORMAL
NORMAL
Check +12V Line of MAIN BOARD to Tuner
Check/Replace Tuner

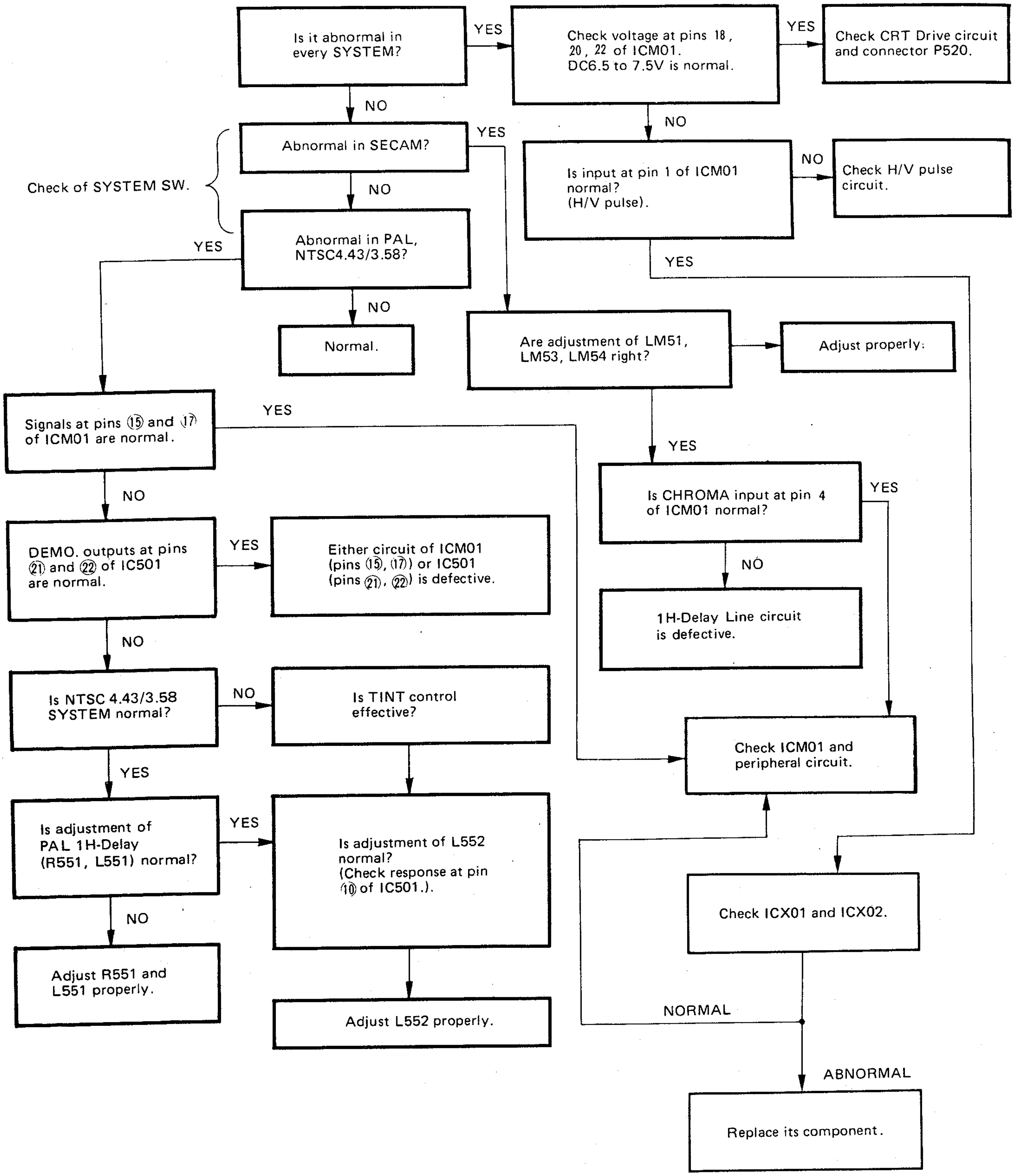
## 5. NO PICTURE (RASTER AND SOUND OK)


Check whether brightness can be changed by turning Brightness VR
YES
NO
Check components between ③ and ㊷ of IC501
Check/Replace Q202
NORMAL
ABNORMAL
Check/Replace IC501
Replace its component

## 6. NO COLOUR

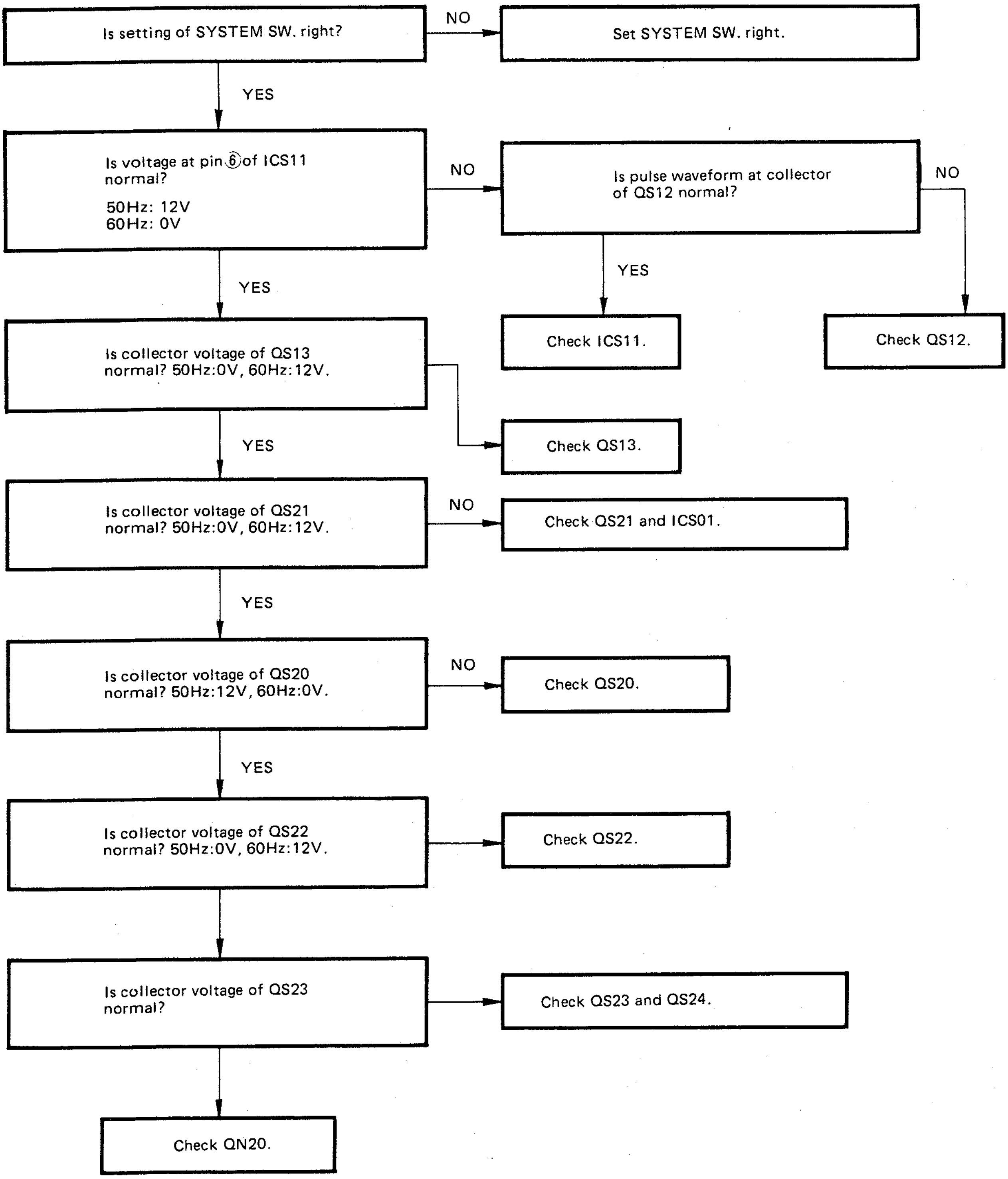

Note: Check of SYSTEM SW.
In receiving a SECAM signal, does colour appear on screen.
NO
YES
Connect a resistor 33k ohm to TPM02 and +B line.
NO
Normal
YES
In reciving PAL, NTSC 4.43/3.58 signal, does colour appear on screen.
YES
Check the gate pulse at pin 30 of ICM01.
NO
NO
NORMAL
Check the gate pulse circuit.
NO
Check voltage at TMP02. DC 7V or lower is normal.
YES
Connect a resistor 10k ohm between pin 12 of IC501 and ground. Does colour appear?
NO
Are DEMO output at pins 20 to 22 of IC501 normal?
YES
NO
Is colour differential signal observed at pins 1 2 7 and 8 of ICX01?
NO
YES
Check/Replace ICX01.
Check ICM01 or peripheral circuit.
NO
Readjust LM52. Does colour appear?
Check response at pin 10 of IC501. (Gate pulse) 0.5Vp-p with 4 to 5μs of pulse width is normal.
NO
Check circuit of pin ㊱ of IC501. (Sync. separation output).
YES
Is operation of system change normal?
NO
Check system change SW. circuit.
YES
Is colour sync. adjustment (4.43/3.58MHz OSC) normal?
YES
Check IC501 or CHROMA circuit.
NO
Adjust colour sync. And check circuit of pin 13 to 16, 18 of IC501.

## 7. SPECIFIC TINTED COLOUR


Is it abnormal in every SYSTEM?
YES
Check voltage at pins 18, 20, 22 of ICM01. DC6.5 to 7.5V is normal.
YES
Check CRT Drive circuit and connector P520.
NO
NO
Abnormal in SECAM?
YES
Is input at pin 1 of ICM01 normal? (H/V pulse).
NO
Check H/V pulse circuit.
Check of SYSTEM SW.
NO
YES
Abnormal in PAL, NTSC4.43/3.58?
YES
NO
Normal.
Are adjustment of LM51, LM53, LM54 right?
Adjust properly.
Signals at pins ⑮ and ⑰ of ICM01 are normal.
YES
YES
Is CHROMA input at pin 4 of ICM01 normal?
YES
NO
DEMO. outputs at pins ㉑ and ㉒ of IC501 are normal.
YES
Either circuit of ICM01 (pins ⑮, ⑰) or IC501 (pins ㉑, ㉒) is defective.
NO
1H-Delay Line circuit is defective.
NO
Is NTSC 4.43/3.58 SYSTEM normal?
NO
Is TINT control effective?
Check ICM01 and peripheral circuit.
YES
Is adjustment of PAL 1H-Delay (R551, L551) normal?
YES
Is adjustment of L552 normal? (Check response at pin ⑩ of IC501.).
NO
Check ICX01 and ICX02.
Adjust R551 and L551 properly.
Adjust L552 properly.
NORMAL
ABNORMAL
Replace its component.

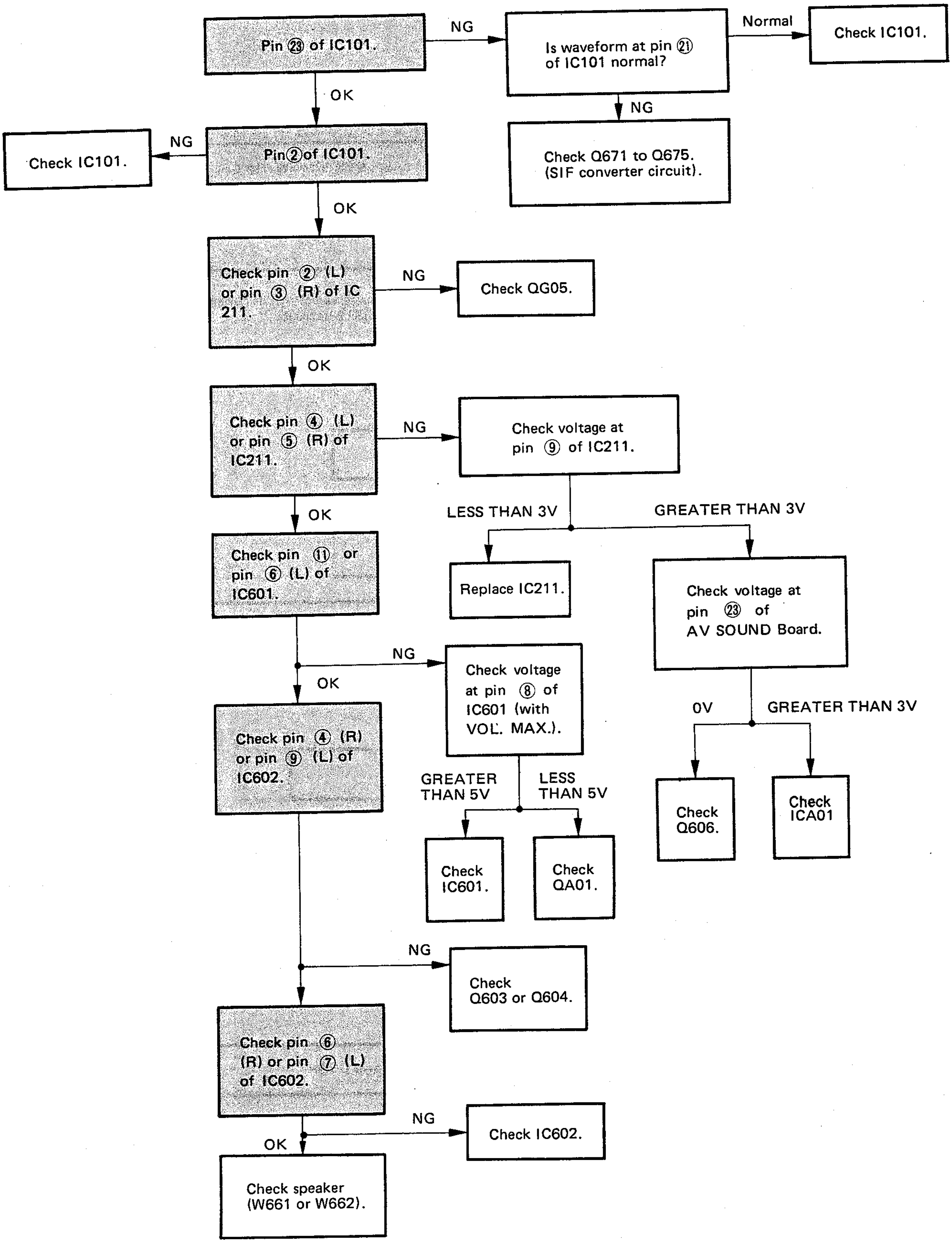
## 8. NO SOUND, NO COLOUR

Note: 60Hz means the system; 3.58NTSC, 55NTSC and PS60.
50Hz means the other systems than noted above.


Is setting of SYSTEM SW. right?
NO
Set SYSTEM SW. right.
YES
Is voltage at pin ⑥ of ICS11 normal?
50Hz: 12V
60Hz: 0V
NO
Is pulse waveform at collector of QS12 normal?
NO
YES
Check ICS11.
Check QS12.
YES
Is collector voltage of QS13 normal? 50Hz:0V, 60Hz:12V.
Check QS13.
YES
Is collector voltage of QS21 normal? 50Hz:0V, 60Hz:12V.
NO
Check QS21 and ICS01.
YES
Is collector voltage of QS20 normal? 50Hz:12V, 60Hz:0V.
NO
Check QS20.
YES
Is collector voltage of QS22 normal? 50Hz:0V, 60Hz:12V.
Check QS22.
Is collector voltage of QS23 normal?
Check QS23 and QS24.
Check QN20.

## 9. NO SOUND

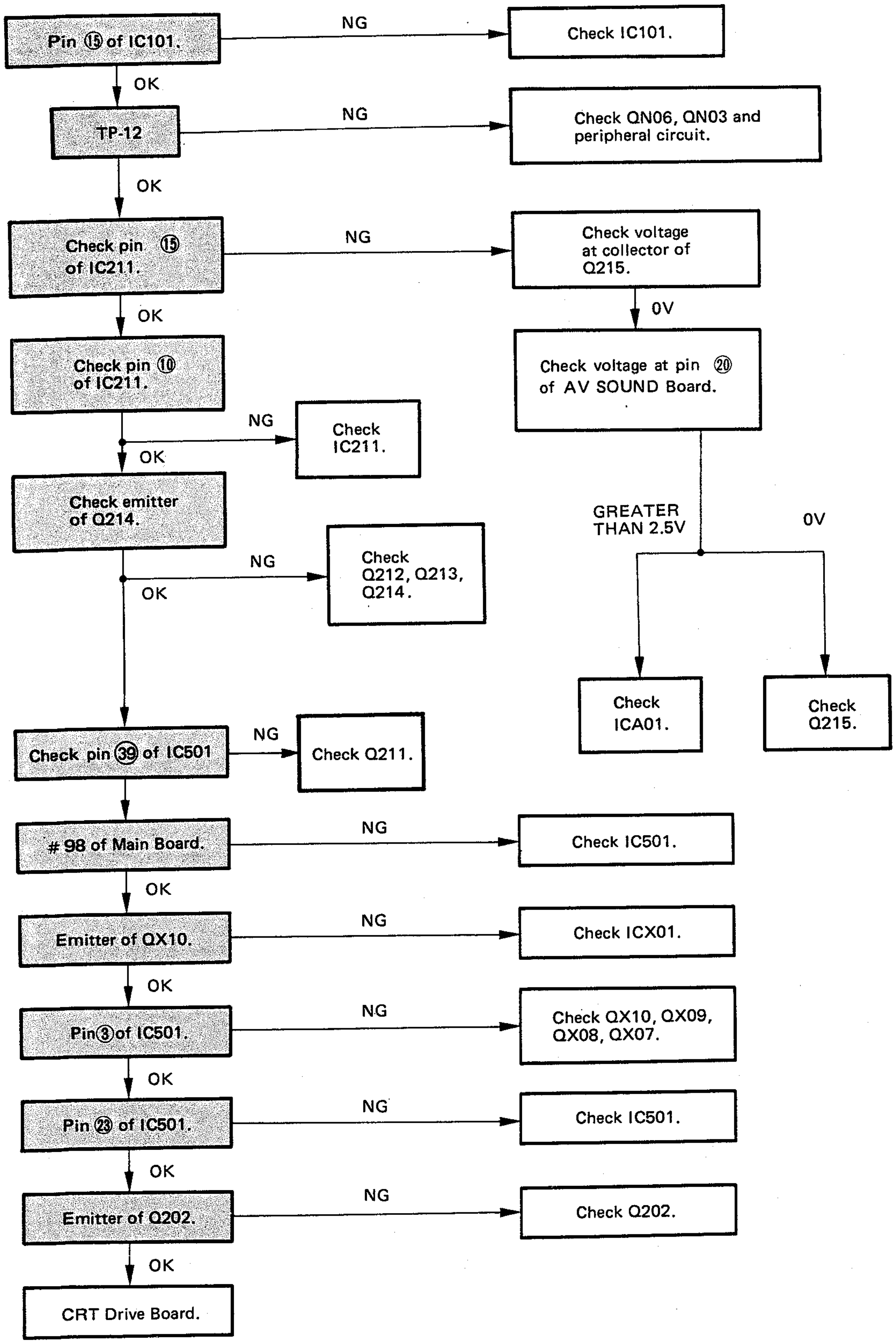
Note: Check the sound signal waveform for shaded area below.



Pin ㉓ of IC101.
NG
Is waveform at pin ㉑ of IC101 normal?
Normal
Check IC101.
NG
Check Q671 to Q675. (SIF converter circuit).
OK
Pin②of IC101.
NG
Check IC101.
OK
Check pin ② (L) or pin ③ (R) of IC 211.
NG
Check QG05.
OK
Check pin ④ (L) or pin ⑤ (R) of IC211.
NG
Check voltage at pin ⑨ of IC211.
LESS THAN 3V
Replace IC211.
GREATER THAN 3V
Check voltage at pin ㉓ of AV SOUND Board.
0V
Check Q606.
GREATER THAN 3V
Check ICA01
OK
Check pin ⑪ or pin ⑥ (L) of IC601.
NG
Check voltage at pin ⑧ of IC601 (with VOL. MAX.).
GREATER THAN 5V
Check IC601.
LESS THAN 5V
Check QA01.
OK
Check pin ④ (R) or pin ⑨ (L) of IC602.
NG
Check Q603 or Q604.
Check pin ⑥ (R) or pin ⑦ (L) of IC602.
NG
Check IC602.
OK
Check speaker (W661 or W662).

## 10. NO PICTURE (RASTER OK)

Note: Check video signal waveform for shaded area below.


Pin ⑮ of IC101.
NG
Check IC101.
OK
TP-12
NG
Check QN06, QN03 and peripheral circuit.
OK
Check pin ⑮ of IC211.
NG
Check voltage at collector of Q215.
0V
Check voltage at pin ⑳ of AV SOUND Board.
GREATER THAN 2.5V
0V
Check ICA01.
Check Q215.
OK
Check pin ⑩ of IC211.
NG
Check IC211.
OK
Check emitter of Q214.
NG
Check Q212, Q213, Q214.
OK
Check pin ㊴ of IC501
NG
Check Q211.
# 98 of Main Board.
NG
Check IC501.
OK
Emitter of QX10.
NG
Check ICX01.
OK
Pin③of IC501.
NG
Check QX10, QX09, QX08, QX07.
OK
Pin ㉓ of IC501.
NG
Check IC501.
OK
Emitter of Q202.
NG
Check Q202.
OK
CRT Drive Board.

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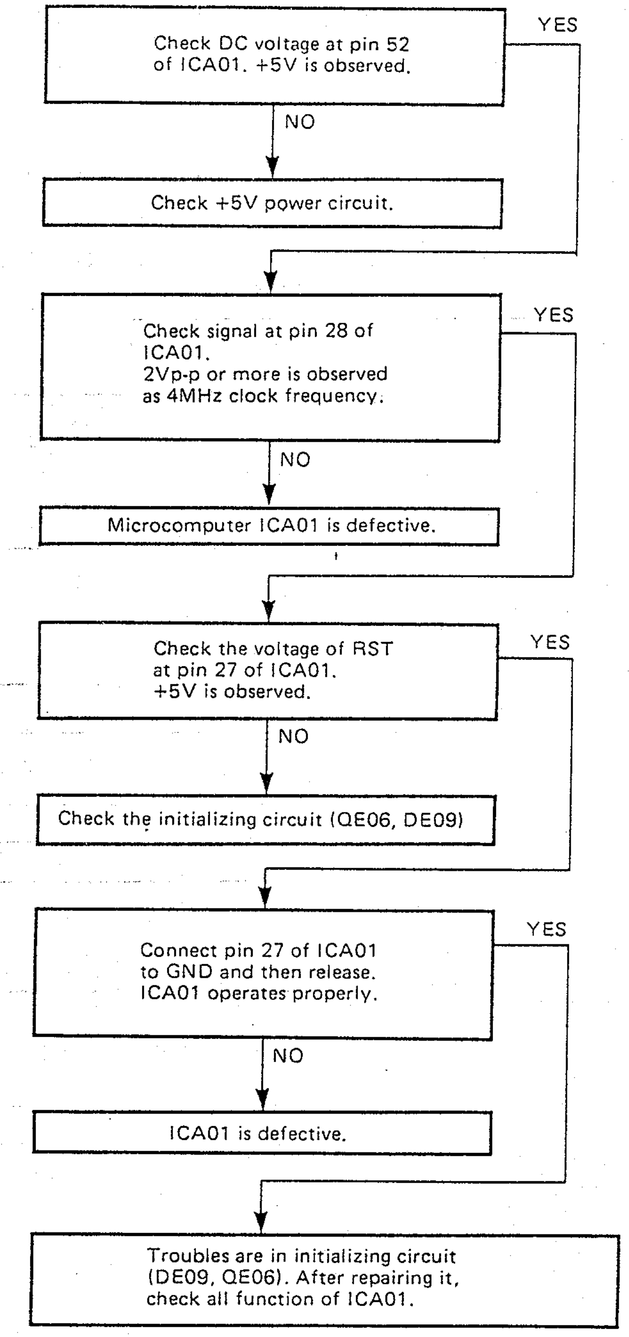
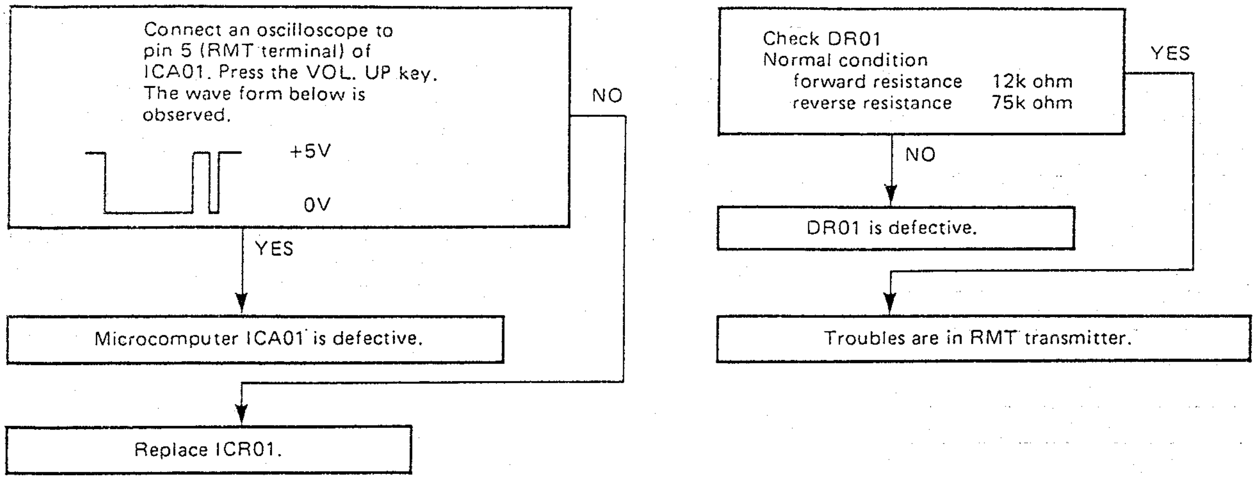
## [CHART 2] Microcomputer (ICA01) Operation Check

**Note:** Before checking Microcomputer, check that control buttons and their connection work properly.


Check DC voltage at pin 52 of ICA01. +5V is observed.
YES
NO
Check +5V power circuit.
Check signal at pin 28 of ICA01. 2Vp-p or more is observed as 4MHz clock frequency.
YES
NO
Microcomputer ICA01 is defective.
Check the voltage of RST at pin 27 of ICA01. +5V is observed.
YES
NO
Check the initializing circuit (QE06, DE09)
Connect pin 27 of ICA01 to GND and then release. ICA01 operates properly.
YES
NO
ICA01 is defective.
Troubles are in initializing circuit (DE09, QE06). After repairing it, check all function of ICA01.

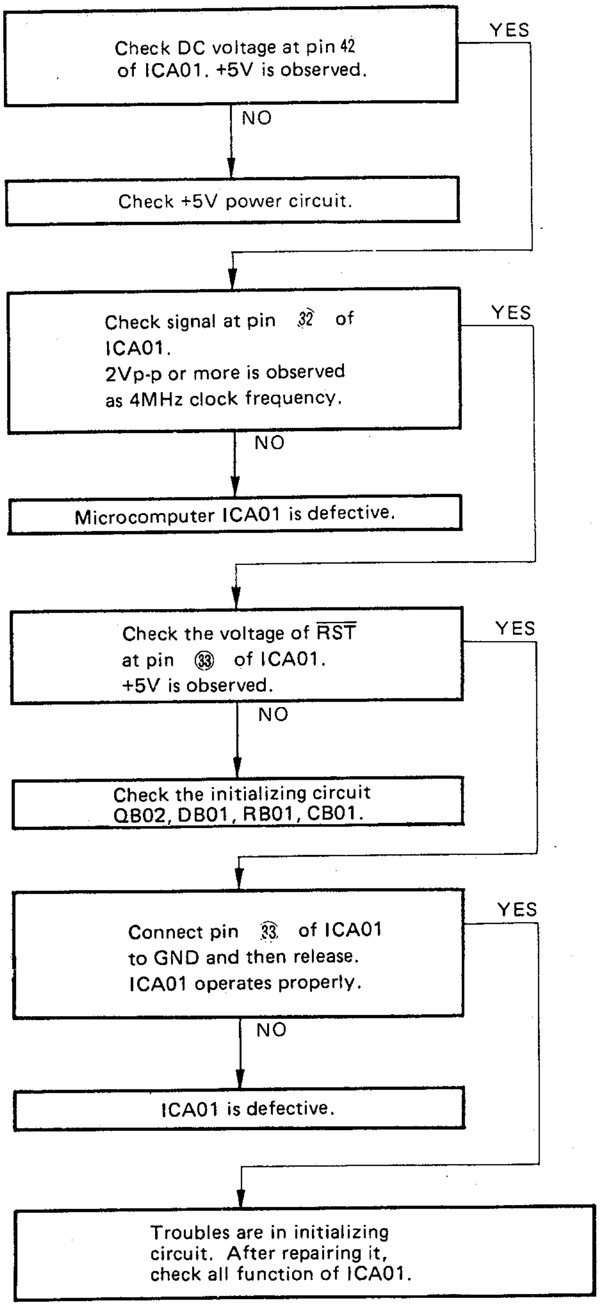
## [CHART 3] Remote Control Operation Check

**Note:** Before checking RMT operation, check that key operation on TV set is proper.


Connect an oscilloscope to pin 5 (RMT terminal) of ICA01. Press the VOL. UP key. The wave form below is observed.
+5V
0V
NO
YES
Microcomputer ICA01 is defective.
Replace ICR01.
Check DR01
Normal condition
forward resistance 12k ohm
reverse resistance 75k ohm
YES
NO
DR01 is defective.
Troubles are in RMT transmitter.

## [CHART 2] Microcomputer (ICA01) Operation Check

**Note:** Before checking Microcomputer, check that control buttons and their connection work properly.



Check DC voltage at pin 42 of ICA01. +5V is observed.

Check +5V power circuit.

Check signal at pin ㉜ of ICA01. 2Vp-p or more is observed as 4MHz clock frequency.

Microcomputer ICA01 is defective.

Check the voltage of $\overline{RST}$ at pin ㉝ of ICA01. +5V is observed.

Check the initializing circuit QB02, DB01, RB01, CB01.

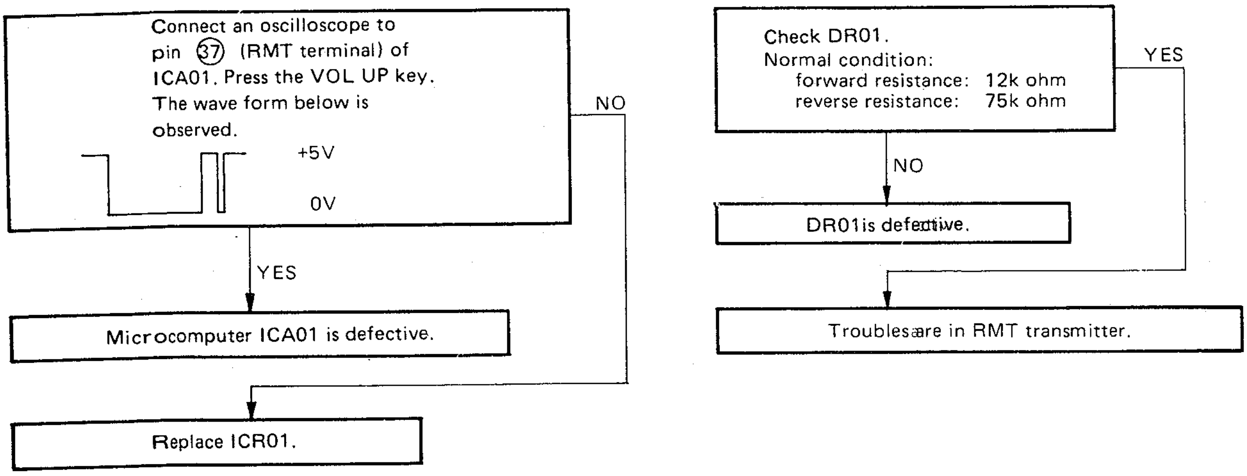
Connect pin ㉝ of ICA01 to GND and then release. ICA01 operates properly.

ICA01 is defective.

Troubles are in initializing circuit. After repairing it, check all function of ICA01.

## [CHART 3] Remote Control Operation Check

Note: Before checking RMT operation, check that key operation on TV set is proper.



Connect an oscilloscope to pin ㊲ (RMT terminal) of ICA01. Press the VOL UP key. The wave form below is observed.

Microcomputer ICA01 is defective.

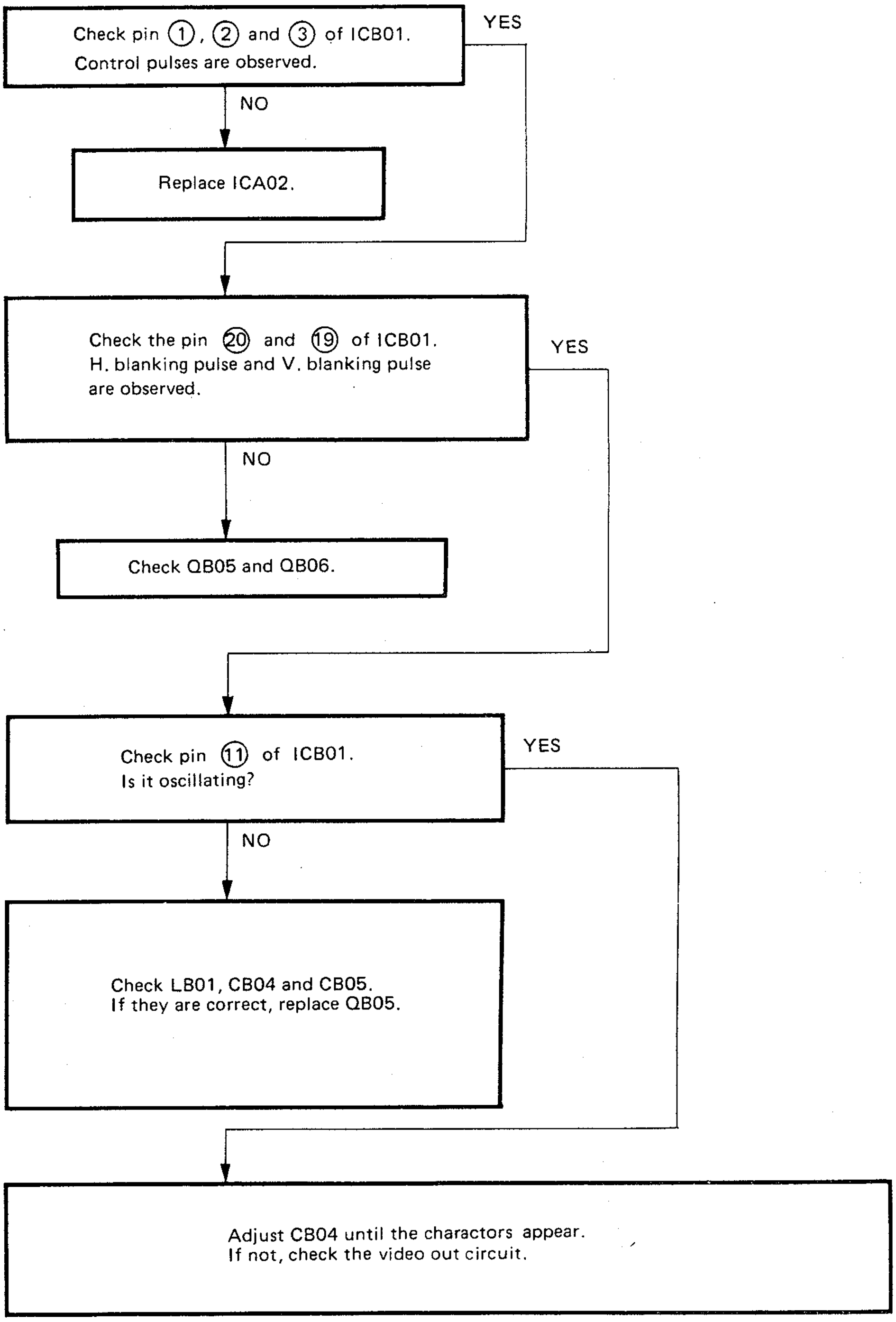
Replace ICR01.

Check DR01.
Normal condition:
forward resistance: 12k ohm
reverse resistance: 75k ohm

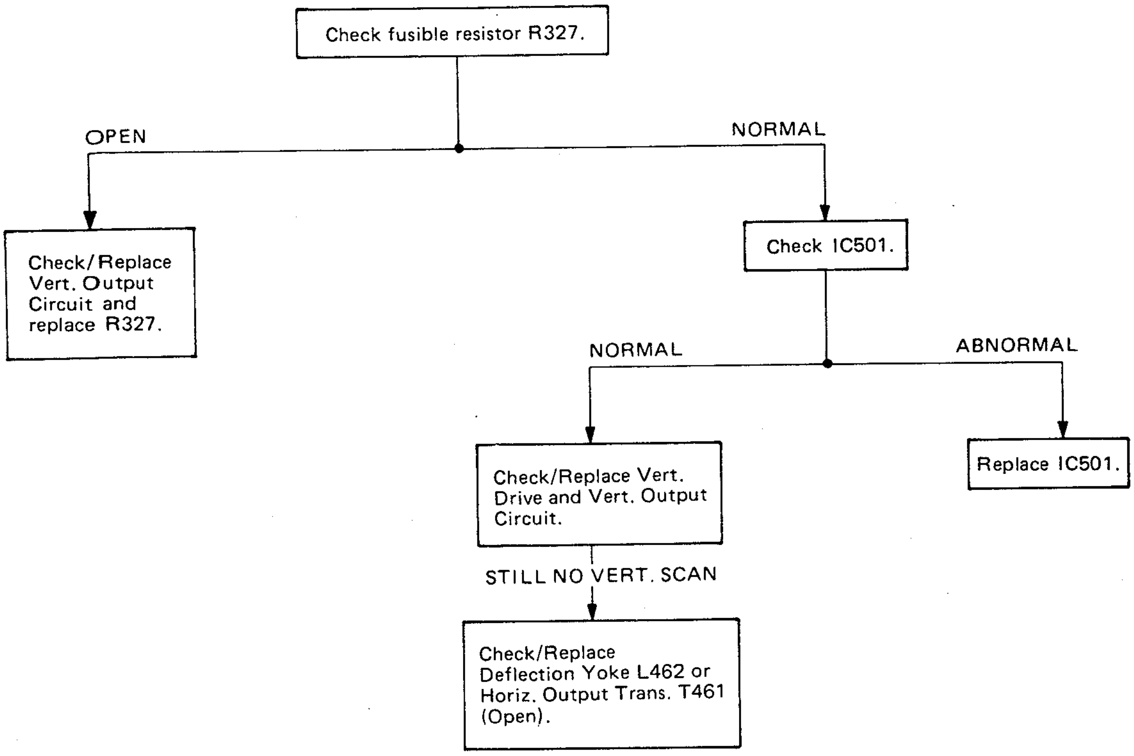
DR01 is defective.

Troubles are in RMT transmitter.

## [CHART 4] On Screen Display Operation Check


Check pin ①, ② and ③ of ICB01.
Control pulses are observed.
YES
NO
Replace ICA02.
Check the pin ⑳ and ⑲ of ICB01.
H. blanking pulse and V. blanking pulse are observed.
YES
NO
Check QB05 and QB06.
Check pin ⑪ of ICB01.
Is it oscillating?
YES
NO
Check LB01, CB04 and CB05.
If they are correct, replace QB05.
Adjust CB04 until the charactors appear.
If not, check the video out circuit.

## 12. NO VERT. SCAN (ONE HORIZ. LINE RASTER)


Check fusible resistor R327.
OPEN
NORMAL
Check/Replace Vert. Output Circuit and replace R327.
Check IC501.
NORMAL
ABNORMAL
Check/Replace Vert. Drive and Vert. Output Circuit.
Replace IC501.
STILL NO VERT. SCAN
Check/Replace Deflection Yoke L462 or Horiz. Output Trans. T461 (Open).

## 13. OUT OF VERT. SYNC. AND HORIZ. SYNC.

Check/Replace Sync. Circuit from pin ㊵ of IC501 to pin ㊲ of IC501.

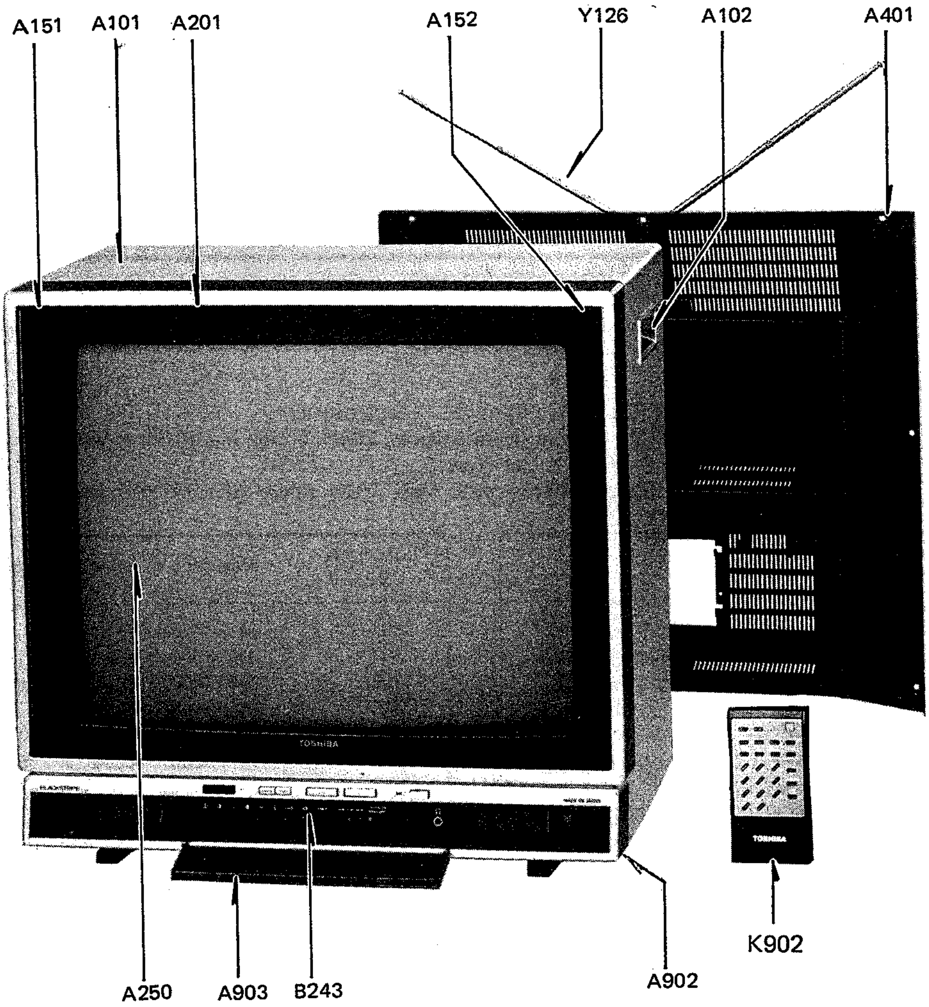
## 14. OUT OF VERT. SYNC.

Check/Replace Vert. OSC Circuit and Vert. Hold Circuit connected to Pins ㉖, ㉗ and ㉙ of IC501. Check/Replace IC501.

## 15. OUT OF HORIZ. SYNC.

Check/Replace Horiz. OSC Circuit, Horiz. Hold and Horiz. AFC Circuit connected to Pins ㉝ and ㉞ of IC501. Check/Replace IC501.

# CABINET REPLACEMENT PARTS LIST



| Location No. | Part No. | Description |
|---|---|---|
| A101 | 23887560 | Cabinet, Proper |
| A102 | 23805645 | Handle |
| A201 | 23417854 | Bezel |
| A250 | 23827712 | Filter Glass |
| A251 | 23846752 | Filter Glass Holding(L) |
| A252 | 23846753 | Filter Glass Holding(R) |
| A401 | 23999611 | Back Cover |
| A406 | 23293977 | Adapter, Aerial Matching |
| A410 | 23832473 | Aerial Holder |
| A701 | 23924291 | Case |
| A702 | 23934919 | Packing |
| A902 | 23885620 | Control Panel |
| A903 | 23999613 | Door |
| A904 | 23807236 | Mask |
| B242 | 23874506 | Knob, MEMOLY |
| K902 | 23120760 | Remote Hand Unit, CT-9129 |
| Y101 | 23994249 | Owner's Hand Book |
| Y108 | 23116544 | AC Adaptor |
| Y126 | 23124971 | VHF Aerial, Telescopic |

# CHASSIS REPLACEMENT PARTS LIST

**WARNING:** BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

**CAUTION:** The international hazard symbols in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

*NOTICE: The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.*

**ABBREVIATIONS:**

Capacitors . . . . CD: Ceramic Disk, PF: Plastic Film, EL: Electrolytic
Resistors . . . . . CF: Carbon Film, CC: Carbon Composition, OMF: Oxide Metal Film, VR: Variable Resistor. MF: Metal Film, FR: Fusible Resistor.
(All CD and PF capacitors are ±5%, 50v and all resistors, ±5%, 1/6w unless otherwise noted.)

## CAPACITORS

| Location No. | Part No. | Description |
|---|---|---|
| C101 | 24232103 | CD, 0.01µF, +80%, −20% |
| C102 | 24212102 | CD, 1000pF, ±10% |
| C103 | 24232103 | CD, 0.01µF, +80%, −20% |
| C104 | 24232103 | CD, 0.01µF, +80%, −20% |
| C106 | 24617969 | EL, 0.22µF, ±20%, 50V |
| C107 | 24636100 | EL, 10µF, 50V |
| C108 | 24232103 | CD, 0.01µF, +80%, −20% |
| C109 | 24232103 | CD, 0.01µF, +80%, −20% |
| C111 | 24212222 | CD, 2200pF, ±10% |
| C161 | 24232103 | CD, 0.01µF, +80%, −20% |
| C162 | 24232103 | CD, 0.01µF, +80%, −20% |
| C163 | 24232103 | CD, 0.01µF, +80%, −20% |
| C171 | 24212102 | CD, 1000pF, ±10% |
| C172 | 24212102 | CD, 1000pF, ±10% |
| C174 | 24436150 | CD, 15pF |
| C175 | 24436020 | CD, 2pF, ±0.25pF |
| C176 | 24436020 | CD, 2pF, ±0.25pF |
| C202 | 24436820 | CD, 82pF |
| C204 | 24085031 | EL, 1µF, ±20%, 25V, Non-Polar |
| C206 | 24636479 | EL, 4.7µF, 50V |
| C207 | 24633220 | EL, 22µF, 16V |
| C208 | 24633470 | EL, 47µF, 16V |
| C209 | 24538104 | PF, 0.1µF |
| C240 | 24636479 | EL, 4.7µF, 50V |
| C261 | 24636010 | EL, 1µF, 50V |
| C262 | 24636010 | EL, 1µF, 50V |
| C263 | 24636100 | EL, 10µF, 50V |
| C264 | 24633470 | EL, 47µF, 16V |
| C265 | 24633221 | EL, 220µF, 16V |
| C266 | 24085032 | EL, 3.3µF, ±20%, 16V, Non-Polar |
| C267 | 24636100 | EL, 10µF, 50V |
| C268 | 24636229 | EL, 2.2µF, 50V |
| C269 | 24636100 | EL, 10µF, 50V |
| C301 | 24636010 | EL, 1µF, 50V |
| C302 | 24232103 | CD, 0.01µF, +80%, −20% |
| C303 | 24212561 | CD, 560pF, ±10% |
| C304 | 24598122 | PF, 1200pF |
| C305 | 24538333 | PF, 0.033µF |
| C306 | 24538224 | PF, 0.22µF |
| C307 | 24436680 | CD, 68pF |
| C308 | 24617967 | EL, 2.2µF, ±10%, 50V |
| C310 | 24636478 | EL, 0.47µF, 50V |
| C311 | 24757221 | EL, 220µF, 100V |
| C312 | 24755220 | EL, 22µF, 35V |
| C313 | 24640967 | EL, 4.7µF, 250V |
| C316 | 24757101 | EL, 100µF, 100V |
| C317 | 24617996 | EL, 3.3µF, ±10%, 50V |
| C318 | 24214152 | CD, 1500pF, ±10%, 500V |
| C319 | 24636478 | EL, 0.47µF, 50V |
| C320 | 24095987 | PF, 1200pF, 1600V |
| C321 | 24829273 | PF, 0.027µF, 400V |
| C322 | 24212151 | CD, 150pF, ±10% |
| C323 | 24214472 | CD, 4700pF, ±10%, 500V |
| C324 | 24214391 | CD, 390pF, ±10%, 500V |
| C371 | 24593682 | PF, 6800pF |
| C401 | 24593912 | PF, 9100pF |
| C402 | 24636478 | EL, 0.47µF, 50V |
| C403 | 24593562 | PF, 5600pF |
| C405 | 24598302 | PF, 3000pF |
| C406 | 24636010 | EL, 1µF, 50V |
| C407 | 24636010 | EL, 1µF, 50V |
| C408 | 24636100 | EL, 10µF, 50V |
| C409 | 24232103 | CD, 0.01µF, +80%, −20% |
| C410 | 24212152 | CD, 1500pF, ±10% |
| C411 | 24232103 | CD, 0.01µF, +80%, −20% |
| C416 | 24214391 | CD, 390pF, ±10%, 500V |
| C417 | 24214222 | CD, 2200pF, ±10%, 500V |
| C418 | 24757101 | EL, 100µF, 100V |
| C420 | 24212681 | CD, 680pF, ±10% |
| C421 | 24212152 | CD, 1500pF, ±10% |
| C422 | 24593102 | PF, 1000pF |
| C423 | 24633101 | EL, 100µF, 16V |
| ⚠ C440 | 24095916 | PF, 9100pF, 1600V |
| C441 | 24214221 | CD, 220pF, ±10%, 500V |
| ⚠ C442 | 24095962 | PF, 0.47µF, 200V |
| C443 | 24095915 | PF, 0.01µF, 1600V |
| C445 | 24833563 | PF, 0.056µF, ±10%, 200V |
| C446 | 24640973 | EL, 100µF, 160V |
| C447 | 24640968 | EL, 10µF, 400V |

| Location No. | Part No. | Description |
|---|---|---|
| C448 | 24754222 | EL, 2200$\mu$F, 25V |
| C449 | 24633102 | EL, 1000$\mu$F, 16V |
| ⚠ C463 | 24212222 | CD, 2200pF, ±10% |
| C464 | 24442101 | CD, 100pF, ±10%, 2kV |
| C501 | 24436150 | CD, 15pF |
| C502 | 24436100 | CD, 10pF, ±0.25pF |
| C504 | 24636010 | EL, 1$\mu$F, 50V |
| C506 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |
| C507 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |
| C509 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |
| C510 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |
| C511 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |
| C513 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |
| C514 | 24636478 | EL, 0.47$\mu$F, 50V |
| C515 | 24436200 | CD, 20pF, ±0.25pF |
| C516 | 24436080 | CD, 8pF, ±0.25pF |
| C517 | 24353680 | CD, 68pF |
| C518 | 24538223 | PF, 0.022$\mu$F |
| C519 | 24636100 | EL, 10$\mu$F, 50V |
| C520 | 24636100 | EL, 10$\mu$F, 50V |
| C521 | 24538223 | PF, 0.022$\mu$F |
| C522 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |
| C523 | 24538473 | PF, 0.047$\mu$F |
| C524 | 24436270 | CD, 27pF |
| C527 | 24636100 | EL, 10$\mu$F, 50V |
| C531 | 24212821 | CD, 820pF, ±10% |
| C532 | 24212102 | CD, 1000pF, ±10% |
| C533 | 24212821 | CD, 820pF, ±10% |
| C551 | 24093990 | Variable Capacitor, 5.5 to 30pF, 100V |
| C601 | 24436470 | CD, 47pF |
| C602 | 24436470 | CD, 47pF |
| C603 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |
| C604 | 24593682 | PF, 6800pF |
| C606 | 24636479 | EL, 4.7$\mu$F, 50V |
| C610 | 24593472 | PF, 4700pF |
| C611 | 24538124 | PF, 0.12$\mu$F |
| C612 | 24636479 | EL, 4.7$\mu$F, 50V |
| C613 | 24636229 | EL, 2.2$\mu$F, 50V |
| C614 | 24636479 | EL, 4.7$\mu$F, 50V |
| C615 | 24636479 | EL, 4.7$\mu$F, 50V |
| C616 | 24633470 | EL, 47$\mu$F, 16V |
| C617(U902) | 24353620 | CD, 62pF |
| C617(U903) | 24538124 | PF, 0.12$\mu$F |
| C618 | 24593472 | PF, 4700pF |
| C619 | 24633470 | EL, 47$\mu$F, 16V |
| C620 | 24636479 | EL, 4.7$\mu$F, 50V |
| C623 | 24633101 | EL, 100$\mu$F, 16V |
| C624 | 24633101 | EL, 100$\mu$F, 16V |
| C625 | 24754222 | EL, 2200$\mu$F, 25V |
| C626 | 24436101 | CD, 100pF |
| C627 | 24633101 | EL, 100$\mu$F, 16V |
| C628 | 24538223 | PF, 0.022$\mu$F |
| C629 | 24795101 | EL, 100$\mu$F, 25V |
| C630 | 24795101 | EL, 100$\mu$F, 25V |
| C631 | 24633101 | EL, 100$\mu$F, 16V |
| C632 | 24436101 | CD, 100pF |
| C633 | 24538223 | PF, 0.022$\mu$F |
| C634 | 24436221 | CD, 220pF |
| C635 | 24634101 | EL, 100$\mu$F, 25V |
| C636 | 24538104 | PF, 0.1$\mu$F |
| C637 | 24538104 | PF, 0.1$\mu$F |
| C638 | 24436221 | CD, 220pF |
| C639 | 24636339 | EL, 3.3$\mu$F, 50V |

| Location No. | Part No. | Description |
|---|---|---|
| C640 | 24636100 | EL, 10$\mu$F, 50V |
| C641 | 24636339 | EL, 3.3$\mu$F, 50V |
| C642 | 24754471 | EL, 470$\mu$F, 25V |
| C643 | 24754471 | EL, 470$\mu$F, 25V |
| C644 | 24633470 | EL, 47$\mu$F, 16V |
| C671 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |
| C672 | 24357241 | CD, 240pF |
| C674 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |
| C675 | 24538104 | PF, 0.1$\mu$F |
| C677 | 24357271 | CD, 270pF |
| C678 | 24436101 | CD, 100pF |
| C679 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |
| C680 | 24436270 | CD, 27pF |
| C681 | 24357101 | CD, 100pF |
| C682 | 24538103 | PF, 0.01$\mu$F |
| C683 | 24212821 | CD, 820pF, ±10% |
| C684 | 24436391 | CD, 390pF |
| C685 | 24794101 | EL, 100$\mu$F, 16V |
| ⚠ C801 | 24095951 | PF, 0.1$\mu$F, ±20%, AC250V |
| ⚠ C802 | 24095951 | PF, 0.1$\mu$F, ±20%, AC250V |
| ⚠ C803 | 24094655 | CD, 1000pF, ±20%, AC400V |
| ⚠ C804 | 24094655 | CD, 1000pF, ±20%, AC400V |
| ⚠ C805 | 24086977 | EL, 240$\mu$F, 400V |
| C806 | 24538474 | PF, 0.47$\mu$F |
| ⚠ C807 | 24094653 | CD, 220pF, ±20%, AC400V |
| C809 | 24095931 | PF, 2200pF, 1600V |
| ⚠ C810 | 24086977 | EL, 240$\mu$F, 400V |
| C811 | 24538474 | PF, 0.47$\mu$F |
| C812 | 24756010 | EL, 1$\mu$F, 50V |
| C813 | 24598242 | PF, 2400pF |
| C814 | 24212102 | CD, 1000pF, ±10% |
| C815 | 24756479 | EL, 4.7$\mu$F, 50V |
| C816 | 24758100 | EL, 10$\mu$F, 160V |
| C817 | 24215181 | CD, 180pF, ±10%, 1kV |
| C818 | 24086953 | EL, 220$\mu$F, ±20%, 160V |
| C820 | 24754222 | EL, 2200$\mu$F, 25V |
| C821 | 24630960 | EL, 47$\mu$F, ±20%, 25V |
| C825 | 24867303 | PF, 0.03$\mu$F |
| C826 | 24756470 | EL, 47$\mu$F, 50V |
| ⚠ C831 | 24094906 | CD, 4700pF, +80%, −20%, AC250V |
| ⚠ C832 | 24094906 | CD, 4700pF, +80%, −20%, AC250V |
| ⚠ C833 | 24094906 | CD, 4700pF, +80%, −20%, AC250V |
| ⚠ C834 | 24094906 | CD, 4700pF, +80%, −20%, AC250V |
| ⚠ C835 | 24086975 | EL, 220$\mu$F, 200V |
| C836 | 24094905 | CD, 0.01$\mu$F, +80%, −20%, AC250V |
| C837 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |
| C838 | 24636100 | EL, 10$\mu$F, 50V |
| C839 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |
| ⚠ C840 | 24640968 | EL, 10$\mu$F, 400V |
| C841 | 24086975 | EL, 220$\mu$F, 200V |
| C861 | 24754222 | EL, 2200$\mu$F, 25V |
| C862 | 24442101 | CD, 100pF, ±10%, 2kV |
| C863 | 24212102 | CD, 1000pF, ±10% |
| C901 | 24640976 | EL, 2.2$\mu$F, 315V |
| C901 | or 24640987 | EL, 2.2$\mu$F, 350V |
| C902 | 24095931 | PF, 2200pF, 1600V |
| C902 | or 24095981 | PF, 2200pF, 1600V |
| CA01 | 24633470 | EL, 47$\mu$F, 16V |
| CA02 | 24232103 | CD, 0.01$\mu$F, +80%, −20% |

| Location No. | Part No. | Description |
|---|---|---|
| CA03 | 24633100 | EL, 10μF, 16V |
| CA04 | 24232103 | CD, 0.01μF, +80%, −20% |
| CA05 | 24436101 | CD, 100pF |
| CA06 | 24232103 | CD, 0.01μF, +80%, −20% |
| CA07 | 24232103 | CD, 0.01μF, +80%, −20% |
| CA08 | 24636100 | EL, 10μF, 50V |
| CA09 | 24436101 | CD, 100pF |
| CA10 | 24538104 | PF, 0.1μF |
| CA11 | 24538104 | PF, 0.1μF |
| CA15 | 24085028 | EL, 2.2μF, 25V, Non-Polar |
| CA16 | 24636229 | EL, 2.2μF, 50V |
| CA17 | 24538104 | PF, 0.1μF |
| CA18 | 24636229 | EL, 2.2μF, 50V |
| CA19 | 24232103 | CD, 0.01μF, +80%, −20% |
| CA20 | 24636100 | EL, 10μF, 50V |
| CA21 | 24232103 | CD, 0.01μF, +80%, −20% |
| CA22 | 24232103 | CD, 0.01μF, +80%, −20% |
| CA23 | 24636339 | EL, 3.3μF, 50V |
| CA25 | 24232103 | CD, 0.01μF, +80%, −20% |
| CA26 | 24636339 | EL, 3.3μF, 50V |
| CA27 | 24232103 | CD, 0.01μF, +80%, −20% |
| CA28 | 24232103 | CD, 0.01μF, +80%, −20% |
| CA30 | 24085030 | EL, 0.47μF, 25V, Non-Polar |
| CA32 | 24232103 | CD, 0.01μF, +80%, −20% |
| CA33 | 24436221 | CD, 220pF |
| CA34 | 24436391 | CD, 390pF |
| CB04 | 24094941 | Variable Capacitor, 5 to 55pF, 50V |
| CB05 | 24436240 | CD, 24pF |
| CB09 | 24436101 | CD, 100pF |
| CB20 | 24436221 | CD, 220pF |
| CB21 | 24436101 | CD, 100pF |
| CB22 | 24436820 | CD, 82pF |
| CB23 | 24436101 | CD, 100pF |
| CB25 | 24212102 | CD, 1000pF, ±10% |
| CB26 | 24436101 | CD, 100pF |
| CB27 | 24633100 | EL, 10μF, 16V |
| CB28 | 24436101 | CD, 100pF |
| CE02 | 24797471 | EL, 470μF, 50V |
| CE03 | 24797470 | EL, 47μF, 50V |
| CE04 | 24797470 | EL, 47μF, 50V |
| CE05 | 24797470 | EL, 47μF, 50V |
| CE06 | 24755100 | EL, 10μF, 35V |
| CG31 | 24636479 | EL, 4.7μF, 50V |
| CG32 | 24538103 | PF, 0.01μF |
| CG33 | 24636100 | EL, 10μF, 50V |
| CG34 | 24538224 | PF, 0.22μF |
| CG35 | 24636479 | EL, 4.7μF, 50V |
| CG36 | 24636010 | EL, 1μF, 50V |
| CG37 | 24636010 | EL, 1μF, 50V |
| CG38 | 24636010 | EL, 1μF, 50V |
| CG39 | 24636010 | EL, 1μF, 50V |
| CG40 | 24636100 | EL, 10μF, 50V |
| CG41 | 24636100 | EL, 10μF, 50V |
| CM01 | 24357220 | CD, 22pF |
| CM02 | 24436101 | CD, 100pF |
| CM03 | 24436101 | CD, 100pF |
| CM04 | 24436151 | CD, 150pF |
| CM05 | 24436151 | CD, 150pF |
| CM06 | 24436151 | CD, 150pF |
| CM07 | 24636010 | EL, 1μF, 50V |
| CM09 | 24232103 | CD, 0.01μF, +80%, −20% |
| CM10 | 24232103 | CD, 0.01μF, +80%, −20% |

| Location No. | Part No. | Description |
|---|---|---|
| CM11 | 24636478 | EL, 0.47μF, 50V |
| CM14 | 24232103 | CD, 0.01μF, +80%, −20% |
| CM15 | 24636010 | EL, 1μF, 50V |
| CM17 | 24636010 | EL, 1μF, 50V |
| CM19 | 24636010 | EL, 1μF, 50V |
| CM21 | 24633100 | EL, 10μF, 16V |
| CM23 | 24633100 | EL, 10μF, 16V |
| CM25 | 24212821 | CD, 820pF, ±10% |
| CM26 | 24232103 | CD, 0.01μF, +80%, −20% |
| CM27 | 24636010 | EL, 1μF, 50V |
| CM28 | 24359390 | CD, 39pF |
| CM29 | 24359680 | CD, 68pF |
| CM31 | 24436271 | CD, 270pF |
| CM32 | 24212681 | CD, 680pF, ±10% |
| CM33 | 24359390 | CD, 39pF |
| CM34 | 24359560 | CD, 56pF |
| CM36 | 24436271 | CD, 270pF |
| CM38 | 24633100 | EL, 10μF, 16V |
| CM39 | 24633100 | EL, 10μF, 16V |
| CM40 | 24633331 | EL, 330μF, 16V |
| CM41 | 24232103 | CD, 0.01μF, +80%, −20% |
| CM43 | 24232103 | CD, 0.01μF, +80%, −20% |
| CM44 | 24232103 | CD, 0.01μF, +80%, −20% |
| CM45 | 24633470 | EL, 47μF, 16V |
| CM60 | 24232103 | CD, 0.01μF, +80%, −20% |
| CM62 | 24436391 | CD, 390pF |
| CM63 | 24436391 | CD, 390pF |
| CM66 | 24232103 | CD, 0.01μF, +80%, −20% |
| CM70 | 24357820 | CD, 82pF |
| CM71 | 24212821 | CD, 820pF, ±10% |
| CM73 | 24593122 | PF, 1200pF |
| CN02 | 24232103 | CD, 0.01μF, +80%, −20% |
| CN07 | 24232103 | CD, 0.01μF, +80%, −20% |
| CN08 | 24232103 | CD, 0.01μF, +80%, −20% |
| CN09 | 24353510 | CD, 51pF |
| CN10 | 24232103 | CD, 0.01μF, +80%, −20% |
| CN11 | 24636100 | EL, 10μF, 50V |
| CN20 | 24436070 | CD, 7pF, ±0.25pF |
| CN21 | 24232103 | CD, 0.01μF, +80%, −20% |
| CN22 | 24232103 | CD, 0.01μF, +80%, −20% |
| CN24 | 24436050 | CD, 5pF, ±0.25pF |
| CN25 | 24636100 | EL, 10μF, 50V |
| CN26 | 24636100 | EL, 10μF, 50V |
| CN27 | 24436330 | CD, 33pF |
| CN30 | 24232103 | CD, 0.01μF, +80%, −20% |
| CN51 | 24093990 | Variable Capacitor, 5.5 to 30pF, 100V |
| CN52 | 24093990 | Variable Capacitor, 5.5 to 30pF, 100V |
| CN71 | 24232103 | CD, 0.01μF, +80%, −20% |
| CN72 | 24356820 | CD, 82pF |
| CN73 | 24232103 | CD, 0.01μF, +80%, −20% |
| CN74 | 24232103 | CD, 0.01μF, +80%, −20% |
| CR01 | 24501222 | PF, 2200pF |
| CR02 | 24538683 | PF, 0.068μF |
| CR03 | 24203100 | EL, 10μF, 16V |
| CR04 | 24202330 | EL, 33μF, 10V |
| CR05 | 24203100 | EL, 10μF, 16V |
| CR06 | 24203101 | EL, 100μF, 16V |
| CR07 | 24593222 | PF, 2200pF |
| CS08 | 24232103 | CD, 0.01μF, +80%, −20% |
| CS09 | 24633100 | EL, 10μF, 16V |
| CS11 | 24636010 | EL, 1μF, 50V |
| CS14 | 24636010 | EL, 1μF, 50V |

| Location No. | Part No. | Description |
|---|---|---|
| CS15 | 24085031 | EL, 1μF, ±20%, 25V, Non-Polar |
| CX01 | 24538334 | PF, 0.33μF |
| CX02 | 24538334 | PF, 0.33μF |
| CX03 | 24436101 | CD, 100pF |
| CX04 | 24436101 | CD, 100pF |
| CX05 | 24436331 | CD, 330pF |
| CX06 | 24436221 | CD, 220pF |
| CX07 | 24436221 | CD, 220pF |
| CX08 | 24538104 | PF, 0.1μF |
| CX09 | 24636100 | EL, 10μF, 50V |
| CX10 | 24538334 | PF, 0.33μF |
| CX11 | 24636100 | EL, 10μF, 50V |
| CX12 | 24232103 | CD, 0.01μF, +80%, −20% |
| CX13 | 24212102 | CD, 1000pF, ±10% |
| CX14 | 24636479 | EL, 4.7μF, 50V |
| CX15 | 24633330 | EL, 33μF, 16V |
| CX17 | 24633101 | EL, 100μF, 16V |
| CX19 | 24633471 | EL, 470μF, 16V |
| **RESISTROS** | | |
| R101 | 24366821 | CF, 820 ohm |
| R104 | 24366683 | CF, 68k ohm |
| R105 | 24366221 | CF, 220 ohm |
| R107 | 24366824 | CF, 820k ohm |
| R108 | 24366392 | CF, 3900 ohm |
| R109 | 24366332 | CF, 3300 ohm |
| R151 | 24066953 | VR, 5k ohm, 1/10W |
| R152 | 24066946 | VR, 1M ohm, 1/10W |
| R161 | 24366131 | CF, 130 ohm |
| R162 | 24366102 | CF, 1k ohm |
| R163 | 24366562 | CF, 5600 ohm |
| R164 | 24366221 | CF, 220 ohm |
| R165 | 24366471 | CF, 470 ohm |
| R166 | 24366270 | CF, 27 ohm |
| R167 | 24366680 | CF, 68 ohm |
| R171 | 24366122 | CF, 1200 ohm |
| R172 | 24366122 | CF, 1200 ohm |
| R201 | 24366151 | CF, 150 ohm |
| R202 | 24366821 | CF, 820 ohm |
| R203 | 24366162 | CF, 1600 ohm |
| R204 | 24366122 | CF, 1200 ohm |
| R205 | 24552331 | OMF, 330 ohm, 1/2W |
| R207 | 24366102 | CF, 1k ohm |
| R209 | 24366363 | CF, 36k ohm |
| R210 | 24366162 | CF, 1600 ohm |
| R212 | 24360103 | CF, 10k ohm, 1/8W |
| R213 | 24366183 | CF, 18k ohm |
| R214 | 24366222 | CF, 2200 ohm |
| R215 | 24360101 | CF, 100 ohm, 1/8W |
| R216 | 24360563 | CF, 56k ohm, 1/8W |
| R217 | 24366301 | CF, 300 ohm |
| R218 | 24366824 | CF, 820k ohm |
| R219 | 24553241 | OMF, 240 ohm, 1W |
| R221 | 24366101 | CF, 100 ohm |
| R222 | 24366102 | CF, 1k ohm |
| R223 | 24360822 | CF, 8200 ohm, 1/8W |
| R224 | 24366222 | CF, 2200 ohm |
| R233 | 24366220 | CF, 22 ohm |
| R234 | 24360220 | CF, 22 ohm, 1/8W |
| R235 | 24360682 | CF, 6800 ohm, 1/8W |
| R236 | 24366561 | CF, 560 ohm |
| R237 | 24360473 | CF, 47k ohm, 1/8W |
| R239 | 24366334 | CF, 330k ohm |

| Location No. | Part No. | Description |
|---|---|---|
| R240 | 24366473 | CF, 47k ohm |
| R241 | 24360124 | CF, 120k ohm, 1/8W |
| R242 | 24366152 | CF, 1500 ohm |
| R243 | 24366222 | CF, 2200 ohm |
| R244 | 24360153 | CF, 15k ohm, 1/8W |
| R247 | 24360272 | CF, 2700 ohm, 1/8W |
| R248 | 24366562 | CF, 5600 ohm |
| R252 | 24061594 | VR, 200 ohm, 1/8W |
| R253 | 24061594 | VR, 200 ohm, 1/8W |
| R255 | 24066940 | VR, 5k ohm, 1/10W |
| R256 | 24063750 | VR, 10k ohm, 0.08W |
| R257 | 24063754 | VR, 500 ohm, 0.08W |
| R261 | 24360102 | CF, 1k ohm, 1/8W |
| R262 | 24366102 | CF, 1k ohm |
| R263 | 24366473 | CF, 47k ohm |
| R264 | 24366473 | CF, 47k ohm |
| R265 | 24366821 | CF, 820 ohm |
| R266 | 24366750 | CF, 75 ohm |
| R267 | 24366910 | CF, 91 ohm |
| R268 | 24366431 | CF, 430 ohm |
| R269 | 24366472 | CF, 4700 ohm |
| R270 | 24366223 | CF, 22k ohm |
| R271 | 24366103 | CF, 10k ohm |
| R272 | 24366332 | CF, 3300 ohm |
| R273 | 24366102 | CF, 1k ohm |
| R274 | 24366152 | CF, 1500 ohm |
| R275 | 24366102 | CF, 1k ohm |
| R277 | 24366273 | CF, 27k ohm |
| R278 | 24366683 | CF, 68k ohm |
| R279 | 24366202 | CF, 2k ohm |
| R280 | 24366272 | CF, 2700 ohm |
| R283 | 24360563 | CF, 56k ohm, 1/8W |
| R290 | 24366101 | CF, 100 ohm |
| R295 | 24360473 | CF, 47k ohm, 1/8W |
| R301 | 24366751 | CF, 750 ohm |
| R302 | 24366564 | CF, 560k ohm |
| R303 | 24945225 | CC, 2.2M ohm, ±10%, 1/4W |
| R304 | 24366103 | CF, 10k ohm |
| R306 | 24366182 | CF, 1800 ohm |
| R308 | 24366393 | CF, 39k ohm |
| R309 | 24360244 | CF, 240k ohm, 1/8W |
| R310 | 24946825 | CC, 8.2M ohm, ±10%, 1/2W |
| R312 | 24366563 | CF, 56k ohm |
| R313 | 24366113 | CF, 11k ohm |
| R314 | 24366303 | CF, 30k omh |
| R315 | 24366362 | CF, 3600 ohm |
| R316 | 24366333 | CF, 33k ohm |
| R317 | 24383431 | OMF, 430 ohm, 2W |
| R318 | 24383431 | OMF, 430 ohm, 2W |
| R319 | 24552511 | OMF, 510 ohm, 1/2W |
| R320 | 24360102 | CF, 1k ohm, 1/8W |
| R321 | 24552202 | OMF, 2k ohm, 1/2W |
| R322 | 24552102 | OMF, 1k ohm, 1/2W |
| R323 | 24323109 | OMF, 1 ohm, 2W |
| R324 | 24366223 | CF, 22k ohm |
| R325 | 24384100 | OMF, 10 ohm, 3W |
| R326 | 24360103 | CF, 10k ohm, 1/8W |
| R327 | 24546399 | FR, 3.9 ohm, 1/2W |
| R328 | 24366479 | CF, 4.7 ohm |
| R329 | 24552102 | OMF, 1k ohm, 1/2W |
| R330 | 24321129 | OMF, 1.2 ohm, 1/2W |
| R331 | 24366563 | CF, 56k ohm |
| R332 | 24553112 | OMF, 1100 ohm, 1W |
| R333 | 24360331 | CF, 330 ohm, 1/8W |

| Location No. | Part No. | Description |
|---|---|---|
| R334 | 24553333 | OMF, 33k ohm, 1W |
| R335 | 24552101 | OMF, 100 ohm, 1/2W |
| R341 | 24366102 | CF, 1k ohm |
| R351 | 24063746 | VR, 200k ohm, 0.08W |
| R352 | 24066938 | VR, 20k ohm, 1/10W |
| R381 | 24366302 | CF, 3k ohm |
| R382 | 24366103 | CF, 10k ohm |
| R383 | 24366133 | CF, 13k ohm |
| R384 | 24366302 | CF, 3k ohm |
| R385 | 24366512 | CF, 5100 ohm |
| R386 | 24360823 | CF, 82k ohm, 1/8W |
| R401 | 24366471 | CF, 470 ohm |
| R402 | 24366103 | CF, 10k ohm |
| R403 | 24366362 | CF, 3600 ohm |
| R404 | 24366362 | CF, 3600 ohm |
| R405 | 24366363 | CF, 36k ohm |
| R406 | 24378154 | CF, 150k ohm, ±2%, 1/8W |
| R407 | 24552181 | OMF, 180 ohm, 1/2W |
| R408 | 24383822 | OMF, 8200 ohm, 2W |
| R409 | 24384682 | OMF, 6800 ohm, 3W |
| R410 | 24000947 | OMF, 15k ohm, ±2%, 1/2W |
| R411 | 24552330 | OMF, 33 ohm, 1/2W |
| R412 | 24553102 | OMF, 1k ohm, 1W |
| R413 | 24366621 | CF, 620 ohm |
| R415 | 24383472 | OMF, 4700 ohm, 2W |
| R416 | 24383512 | OMF, 5100 ohm, 2W |
| R417 | 24383512 | OMF, 5100 ohm, 2W |
| R418 | 24946272 | CC, 2700 ohm, ±10%, 1/2W |
| R421 | 24366472 | CF, 4700 ohm |
| R422 | 24366562 | CF, 5600 ohm |
| R423 | 24552432 | OMF, 4300 ohm, 1/2W |
| R424 | 24366682 | CF, 6800 ohm |
| R425 | 24552221 | OMF, 220 ohm, 1/2W |
| R426 | 24382390 | OMF, 39 ohm, 1W |
| R440 | 24366103 | CF, 10k ohm |
| R441 | 24366103 | CF, 10k ohm |
| R443 | 24322109 | OMF, 1 ohm, 1W |
| R444 | 24323828 | OMF, 0.82 ohm, 2W |
| R448 | 24548369 | FR, 3.6 ohm, 2W |
| R451 | 24066952 | VR, 10k ohm, 1/10W |
| R452 | 24066938 | VR, 20k ohm, 1/10W |
| R501 | 24360821 | CF, 820 ohm, 1/8W |
| R502 | 24360242 | CF, 2400 ohm, 1/8W |
| R504 | 24366334 | CF, 330k ohm |
| R505 | 24360103 | CF, 10k ohm, 1/8W |
| R506 | 24366162 | CF, 1600 ohm |
| R507 | 24366511 | CF, 510 ohm |
| R509 | 24366241 | CF, 240 ohm |
| R510 | 24360302 | CF, 3k ohm, 1/8W |
| R512 | 24360104 | CF, 100k ohm, 1/8W |
| R513 | 24366153 | CF, 15k ohm |
| R514 | 24366511 | CF, 510 ohm |
| R515 | 24366821 | CF, 820 ohm |
| R516 | 24366201 | CF, 200 ohm |
| R517 | 24366823 | CF, 82k ohm |
| R518 | 24367333 | CF, 33k ohm, ±2% |
| R519 | 24367333 | CF, 33k ohm, ±2% |
| R520 | 24360223 | CF, 22k ohm, 1/8W |
| R526 | 24366471 | CF, 470 ohm |
| R530 | 24366621 | CF, 620 ohm |
| R531 | 24366621 | CF, 620 ohm |
| R540 | 24366181 | CF, 180 ohm |
| R541 | 24366161 | CF, 160 ohm |
| R542 | 24366181 | CF, 180 ohm |

| Location No. | Part No. | Description |
|---|---|---|
| R543 | 24366221 | CF, 220 ohm |
| R544 | 24366221 | CF, 220 ohm |
| R545 | 24360221 | CF, 220 ohm, 1/8W |
| R551 | 24066955 | VR, 1k ohm, 1/10W |
| R555 | 24063750 | VR, 10k ohm, 0.08W |
| R556 | 24063750 | VR, 10k ohm, 0.08W |
| R557 | 24061589 | VR, 10k ohm, 1/8W |
| R558 | 24061589 | VR, 10k ohm, 1/8W |
| R559 | 24061589 | VR, 10k ohm, 1/8W |
| R591 | 24383153 | OMF, 15k ohm, 2W |
| R592 | 24383153 | OMF, 15k ohm, 2W |
| R593 | 24383153 | OMF, 15k ohm, 2W |
| R601 | 24366102 | CF, 1k ohm |
| R602 | 24366102 | CF, 1k ohm |
| R603 | 24366273 | CF, 27k ohm |
| R604 | 24366104 | CF, 100k ohm |
| R605 | 24366302 | CF, 3k ohm |
| R606 | 24366102 | CF, 1k ohm |
| R607 | 24366102 | CF, 1k ohm |
| R610 | 24366122 | CF, 1200 ohm |
| R611 | 24360122 | CF, 1200 ohm, 1/8W |
| R612 | 24360122 | CF, 1200 ohm, 1/8W |
| R613 | 24366102 | CF, 1k ohm |
| R614 | 24366122 | CF, 1200 ohm |
| R615 | 24366154 | CF, 150k ohm |
| R616 | 24366154 | CF, 150k ohm |
| R617 | 24366122 | CF, 1200 ohm |
| R618 | 24360331 | CF, 330 ohm, 1/8W |
| R619 | 24366331 | CF, 330 ohm |
| R620 | 24366222 | CF, 2200 ohm |
| R621 | 24321479 | OMF, 4.7 ohm, 1/2W |
| R622 | 24366273 | CF, 27k ohm |
| R623 | 24321479 | OMF, 4.7 ohm, 1/2W |
| R624 | 24366273 | CF, 27k ohm |
| R625 | 24366392 | CF, 3900 ohm |
| R626 | 24366222 | CF, 2200 ohm |
| R627 | 24366562 | CF, 5600 ohm |
| R628 | 24360103 | CF, 10k ohm, 1/8W |
| R629 | 24366562 | CF, 5600 ohm |
| R630 | 24366472 | CF, 4700 ohm |
| R631 | 24366103 | CF, 10k ohm |
| R632 | 24366472 | CF, 4700 ohm |
| R633 | 24366392 | CF, 3900 ohm |
| R634 | 24366102 | CF, 1k ohm |
| R635 | 24321398 | OMF, 0.39 ohm, 1/2W |
| R636 | 24366333 | CF, 33k ohm |
| R636 | 24360122 | CF, 1200 ohm, 1/8W |
| R637 | 24366333 | CF, 33k ohm |
| R638 | 24366103 | CF, 10k ohm |
| R639 | 24366104 | CF, 100k ohm |
| R640 | 24366152 | CF, 1500 ohm |
| R652 | 24063750 | VR, 10k ohm, 0.08W |
| R653 | 24063750 | VR, 10k ohm, 0.08W |
| R665 | 24946331 | CC, 330 ohm, ±10%, 1/2W |
| R666 | 24946331 | CC, 330 ohm, ±10%, 1/2W |
| R667 | 24360103 | CF, 10k ohm, 1/8W |
| R668 | 24360103 | CF, 10k ohm, 1/8W |
| R671 | 24366333 | CF, 33k ohm |
| R672 | 24366123 | CF, 12k ohm |
| R673 | 24366181 | CF, 180 ohm |
| R674 | 24366102 | CF, 1k ohm |
| R675 | 24366222 | CF, 2200 ohm |
| R676 | 24366152 | CF, 1500 ohm |
| R677 | 24366682 | CF, 6800 ohm |

| Location No. | Part No. | Description |
|---|---|---|
| R678 | 24366562 | CF, 5600 ohm |
| R679 | 24366102 | CF, 1k ohm |
| R680 | 24366152 | CF, 1500 ohm |
| R681 | 24553121 | OMF, 120 ohm, 1W |
| R682 | 24366102 | CF, 1k ohm |
| R683 | 24366203 | CF, 20k ohm |
| R684 | 24366182 | CF, 1800 ohm |
| R685 | 24366203 | CF, 20k ohm |
| R686 | 24366102 | CF, 1k ohm |
| R687 | 24366122 | CF, 1200 ohm |
| R688 | 24366221 | CF, 220 ohm |
| R689 | 24366102 | CF, 1k ohm |
| R690 | 24366221 | CF, 220 ohm |
| R695 | 24366471 | CF, 470 ohm |
| R696 | 24366562 | CF, 5600 ohm |
| R697 | 24366102 | CF, 1k ohm |
| R802 | 24007938 | Cement, 180 ohm, 15W |
| R803 | 24965563 | OMF, 56k ohm, 3W |
| R804 | 24552362 | OMF, 3600 ohm, 1/2W |
| R805 | 24007771 | Cement, 10 ohm, 10W |
| R806 | 24366361 | CF, 360 ohm |
| R807 | 24366100 | CF, 10 ohm |
| R808 | 24321478 | OMF, 0.47 ohm, 1/2W |
| R809 | 24360361 | CF, 360 ohm, 1/8W |
| R810 | 24360304 | CF, 300k ohm, 1/8W |
| R811 | 24378334 | CF, 330k ohm, ±2%, 1/8W |
| R812 | 24553202 | OMF, 2k ohm, 1W |
| R813 | 24366393 | CF, 39k ohm |
| R814 | 24367561 | CF, 560 ohm, ±2% |
| R815 | 24366622 | CF, 6200 ohm |
| R816 | 24366112 | CF, 1100 ohm |
| R817 | 24003987 | MF, 1k ohm, ±2%, 1/4W |
| R818 | 24327202 | MF, 2k ohm, ±1%, 1/4W |
| R819 | 24552470 | OMF, 47 ohm, 1/2W |
| R820 | 24531220 | FR, 22 ohm, 1/2W |
| R821 | 24322228 | OMF, 0.22 ohm, 1W |
| R822 | 24322228 | OMF, 0.22 ohm, 1W |
| R823 | 24366100 | CF, 10 ohm |
| R824 | 24366472 | CF, 4700 ohm |
| R825 | 24360102 | CF, 1k ohm, 1/8W |
| R826 | 24360304 | CF, 300k ohm, 1/8W |
| R827 | 24531222 | FR, 2200 ohm, 1/2W |
| R828 | 24377114 | CF, 110k ohm, 1W |
| R829 | 24378334 | CF, 330k ohm, ±2%, 1/8W |
| R831 | 24007665 | Cement, 5.6 ohm, 20W |
| R831 | or 24007664 | Cement, 5.6 ohm, 20W |
| R832 | 24007664 | Cement, 5.6 ohm, 20W |
| R832 | or 24007665 | Cement, 5.6 ohm, 20W |
| R833 | 24382513 | OMF, 51k ohm, 1W |
| R834 | 24382473 | OMF, 47k ohm, 1W |
| R835 | 24360153 | CF, 15k ohm, 1/8W |
| R836 | 24360242 | CF, 2400 ohm, 1/8W |
| R837 | 24360560 | CF, 56 ohm, 1/8W |
| R838 | 24360102 | CF, 1k ohm, 1/8W |
| R839 | 24382123 | OMF, 12k ohm, 1W |
| R840 | 24382123 | OMF, 12k ohm, 1W |
| R841 | 24360431 | CF, 430 ohm, 1/8W |
| R842 | 24360331 | CF, 330 ohm, 1/8W |
| R843 | 24942101 | CC, 100 ohm, 1/2W |
| R844 | 24382683 | OMF, 68k ohm, 1W |
| R850 | 24066926 | VR, 10k ohm, 1/10W |
| R851 | 24066930 | VR, 500 ohm, 1/10W |
| R861 | 24383361 | OMF, 360 ohm, 2W |
| R862 | 24383361 | OMF, 360 ohm, 2W |

| Location No. | Part No. | Description |
|---|---|---|
| R863 | 24322518 | OMF, 0.51 ohm, 1W |
| R864 | 24322518 | OMF, 0.51 ohm, 1W |
| ⚠ R890 | 24000875 | PTC Thermistor, 18 ohm, ±20%, 290V |
| R901 | 24946272 | CC, 2700 ohm, ±10%, 1/2W |
| R902 | 24946272 | CC, 2700 ohm, ±10%, 1/2W |
| R903 | 24946272 | CC, 2700 ohm, ±10%, 1/2W |
| R920 | 24000880 | FR, 5.1 ohm, 1W |
| RA01 | 24366103 | CF, 10k ohm |
| RA02 | 24366223 | CF, 22k ohm |
| RA03 | 24366223 | CF, 22k ohm |
| RA04 | 24366103 | CF, 10k ohm |
| RA05 | 24366103 | CF, 10k ohm |
| RA06 | 24366102 | CF, 1k ohm |
| RA07 | 24366105 | CF, 1M ohm |
| RA08 | 24366243 | CF, 24k ohm |
| RA09 | 24366753 | CF, 75k ohm |
| RA11 | 24366563 | CF, 56k ohm |
| RA12 | 24366563 | CF, 56k ohm |
| RA13 | 24366434 | CF, 430k ohm |
| RA14 | 24366224 | CF, 220k ohm |
| RA15 | 24366224 | CF, 220k ohm |
| RA16 | 24366224 | CF, 220k ohm |
| RA17 | 24366224 | CF, 220k ohm |
| RA18 | 24366103 | CF, 10k ohm |
| RA20 | 24366562 | CF, 5600 ohm |
| RA21 | 24366102 | CF, 1k ohm |
| RA22 | 24366102 | CF, 1k ohm |
| RA23 | 24366102 | CF, 1k ohm |
| RA24 | 24366102 | CF, 1k ohm |
| RA27 | 24366563 | CF, 56k ohm |
| RA28 | 24366563 | CF, 56k ohm |
| RA29 | 24366563 | CF, 56k ohm |
| RA30 | 24366104 | CF, 100k ohm |
| RA31 | 24366104 | CF, 100k ohm |
| RA32 | 24366104 | CF, 100k ohm |
| RA33 | 24366102 | CF, 1k ohm |
| RA34 | 24366102 | CF, 1k ohm |
| RA35 | 24360102 | CF, 1k ohm, 1/8W |
| RA36 | 24366223 | CF, 22k ohm |
| RA37 | 24366102 | CF, 1k ohm |
| RA38 | 24366432 | CF, 4300 ohm |
| RA39 | 24366103 | CF, 10k ohm |
| RA40 | 24366223 | CF, 22k ohm |
| RA41 | 24360103 | CF, 10k ohm, 1/8W |
| RA43 | 24366223 | CF, 22k ohm |
| RA44 | 24366223 | CF, 22k ohm |
| RA45 | 24360102 | CF, 1k ohm, 1/8W |
| RA46 | 24366203 | CF, 20k ohm |
| RA47 | 24366333 | CF, 33k ohm |
| RA48 | 24366333 | CF, 33k ohm |
| RA49 | 24366333 | CF, 33k ohm |
| RA51 | 24366563 | CF, 56k ohm |
| RA52 | 24366104 | CF, 100k ohm |
| RA53 | 24366153 | CF, 15k ohm |
| RA54 | 24366222 | CF, 2200 ohm |
| RA55 | 24366103 | CF, 10k ohm |
| RA56 | 24366392 | CF, 3900 ohm |
| RA57 | 24366124 | CF, 120k ohm |
| RA60 | 24366153 | CF, 15k ohm |
| RA61 | 24366222 | CF, 2200 ohm |
| RA62 | 24366222 | CF, 2200 ohm |
| RA63 | 24366222 | CF, 2200 ohm |
| RA64 | 24366104 | CF, 100k ohm |

| Location No. | Part No. | Description |
|---|---|---|
| RA65 | 24366363 | CF, 36k ohm |
| RA66 | 24360471 | CF, 470 ohm, 1/8W |
| RA67 | 24366201 | CF, 200 ohm |
| RA68 | 24945185 | CC, 1.8M ohm, ±10%, 1/4W |
| RA80 | 24366304 | CF, 300k ohm |
| RA83 | 24366182 | CF, 1800 ohm |
| RA84 | 24366123 | CF, 12k ohm |
| RA85 | 24366123 | CF, 12k ohm |
| RA86 | 24366473 | CF, 47k ohm |
| RA87 | 24366472 | CF, 4700 ohm |
| RA88 | 24366563 | CF, 56k ohm |
| RA89 | 24366473 | CF, 47k ohm |
| RA90 | 24366182 | CF, 1800 ohm |
| RA91 | 24366223 | CF, 22k ohm |
| RA97 | 24383103 | OMF, 10k ohm, 2W |
| RB03 | 24360333 | CF, 33k ohm, 1/8W |
| RB04 | 24366103 | CF, 10k ohm |
| RB05 | 24360103 | CF, 10k ohm, 1/8W |
| RB06 | 24366302 | CF, 3k ohm |
| RB07 | 24360562 | CF, 5600 ohm, 1/8W |
| RB08 | 24366152 | CF, 1500 ohm |
| RB09 | 24360102 | CF, 1k ohm, 1/8W |
| RB20 | 24366101 | CF, 100 ohm |
| RB21 | 24366681 | CF, 680 ohm |
| RB22 | 24366103 | CF, 10k ohm |
| RB23 | 24366681 | CF, 680 ohm |
| RB25 | 24366103 | CF, 10k ohm |
| RB26 | 24366302 | CF, 3k ohm |
| RB27 | 24366103 | CF, 10k ohm |
| RB28 | 24366392 | CF, 3900 ohm |
| RB29 | 24366221 | CF, 220 ohm |
| RB30 | 24366102 | CF, 1k ohm |
| RB40 | 24366221 | CF, 220 ohm |
| RB41 | 24366101 | CF, 100 ohm |
| RB43 | 24366241 | CF, 240 ohm |
| RE02 | 24942913 | CC, 91k ohm, 1/2W |
| RE03 | 24942913 | CC, 91k ohm, 1/2W |
| RE04 | 24366223 | CF, 22k ohm |
| RE05 | 24366103 | CF, 10k ohm |
| RE06 | 24366222 | CF, 2200 ohm |
| RE07 | 24366562 | CF, 5600 ohm |
| RE08 | 24552331 | OMF, 330 ohm, 1/2W |
| RE09 | 24553222 | OMF, 2200 ohm, 1W |
| RE10 | 24552331 | OMF, 330 ohm, 1/2W |
| RE11 | 24366102 | CF, 1k ohm |
| RG24 | 24941102 | CC, 1k ohm, 1/4W |
| RG31 | 24366473 | CF, 47k ohm |
| RG32 | 24366512 | CF, 5100 ohm |
| RG33 | 24366302 | CF, 3k ohm |
| RG34 | 24366104 | CF, 100k ohm |
| RG35 | 24366393 | CF, 39k ohm |
| RG36 | 24366103 | CF, 10k ohm |
| RG37 | 24366472 | CF, 4700 ohm |
| RG38 | 24366183 | CF, 18k ohm |
| RG39 | 24366332 | CF, 3300 ohm |
| RG40 | 24366102 | CF, 1k ohm |
| RG41 | 24366102 | CF, 1k ohm |
| RG42 | 24360392 | CF, 3900 ohm, 1/8W |
| RG43 | 24366333 | CF, 33k ohm |
| RG44 | 24366333 | CF, 33k ohm |
| RG45 | 24366103 | CF, 10k ohm |
| RG46 | 24366104 | CF, 100k ohm |
| RG47 | 24366222 | CF, 2200 ohm |
| RG48 | 24366104 | CF, 100k ohm |

| Location No. | Part No. | Description |
|---|---|---|
| RM02 | 24366221 | CF, 220 ohm |
| RM03 | 24366333 | CF, 33k ohm |
| RM04 | 24366222 | CF, 2200 ohm |
| RM05 | 24366222 | CF, 2200 ohm |
| RM08 | 24360103 | CF, 10k ohm, 1/8W |
| RM11 | 24366332 | CF, 3300 ohm |
| RM12 | 24366151 | CF, 150 ohm |
| RM13 | 24366332 | CF, 3300 ohm |
| RM14 | 24366151 | CF, 150 ohm |
| RM15 | 24366332 | CF, 3300 ohm |
| RM16 | 24366151 | CF, 150 ohm |
| RM18 | 24366122 | CF, 1200 ohm |
| RM20 | 24366104 | CF, 100k ohm |
| RM21 | 24366473 | CF, 47k ohm |
| RM22 | 24366152 | CF, 1500 ohm |
| RM23 | 24366182 | CF, 1800 ohm |
| RM24 | 24366332 | CF, 3300 ohm |
| RM25 | 24366681 | CF, 680 ohm |
| RM26 | 24366681 | CF, 680 ohm |
| RM27 | 24366152 | CF, 1500 ohm |
| RM28 | 24366182 | CF, 1800 ohm |
| RM29 | 24366332 | CF, 3300 ohm |
| RM30 | 24366681 | CF, 680 ohm |
| RM32 | 24546569 | FR, 5.6 ohm, 1/2W |
| RM34 | 24366681 | CF, 680 ohm |
| RM35 | 24366272 | CF, 2700 ohm |
| RM36 | 24366563 | CF, 56k ohm |
| RM40 | 24360392 | CF, 3900 ohm, 1/8W |
| RM44 | 24366104 | CF, 100k ohm |
| RM45 | 24366103 | CF, 10k ohm |
| RM65 | 24366273 | CF, 27k ohm |
| RM66 | 24366103 | CF, 10k ohm |
| RM68 | 24366103 | CF, 10k ohm |
| RM70 | 24366681 | CF, 680 ohm |
| RM73 | 24366393 | CF, 39k ohm |
| RM74 | 24366681 | CF, 680 ohm |
| RM75 | 24366222 | CF, 2200 ohm |
| RM76 | 24366103 | CF, 10k ohm |
| RM77 | 24366222 | CF, 2200 ohm |
| RM78 | 24366101 | CF, 100 ohm |
| RM79 | 24366101 | CF, 100 ohm |
| RM80 | 24366103 | CF, 10k ohm |
| RM81 | 24366332 | CF, 3300 ohm |
| RM82 | 24366472 | CF, 4700 ohm |
| RM83 | 24366472 | CF, 4700 ohm |
| RN01 | 24366223 | CF, 22k ohm |
| RN02 | 24366331 | CF, 330 ohm |
| RN03 | 24366562 | CF, 5600 ohm |
| RN05 | 24366562 | CF, 5600 ohm |
| RN06 | 24366153 | CF, 15k ohm |
| RN07 | 24366152 | CF, 1500 ohm |
| RN08 | 24366331 | CF, 330 ohm |
| RN09 | 24366562 | CF, 5600 ohm |
| RN12 | 24360203 | CF, 20k ohm, 1/8W |
| RN18 | 24366103 | CF, 10k ohm |
| RN19 | 24366152 | CF, 1500 ohm |
| RN20 | 24366103 | CF, 10k ohm |
| RN21 | 24366472 | CF, 4700 ohm |
| RN22 | 24366102 | CF, 1k ohm |
| RN23 | 24366222 | CF, 2200 ohm |
| RN46 | 24366274 | CF, 270k ohm |
| RN47 | 24941684 | CC, 680k ohm, 1/4W |
| RN61 | 24366562 | CF, 5600 ohm |
| RN62 | 24366562 | CF, 5600 ohm |

| Location No. | Part No. | Description |
|---|---|---|
| RN63 | 24366201 | CF, 200 ohm |
| RN66 | 24366562 | CF, 5600 ohm |
| RN71 | 24366302 | CF, 3k ohm |
| RN72 | 24366562 | CF, 5600 ohm |
| RN73 | 24366562 | CF, 5600 ohm |
| RN74 | 24360221 | CF, 220 ohm, 1/8W |
| RN75 | 24360153 | CF, 15k ohm, 1/8W |
| RN87 | 24360223 | CF, 22k ohm, 1/8W |
| RN88 | 24366273 | CF, 27k ohm |
| RN89 | 24366273 | CF, 27k ohm |
| RR01 | 24360223 | CF, 22k ohm, 1/8W |
| RR02 | 24380100 | CF, 10 ohm, 1/8W |
| RR03 | 24380222 | CF, 2200 ohm, 1/8W |
| RR04 | 24552470 | OMF, 47 ohm, 1/2W |
| RR07 | 24380562 | CF, 5600 ohm, 1/8W |
| RS01 | 24366223 | CF, 22k ohm |
| RS02 | 24366223 | CF, 22k ohm |
| RS03 | 24366102 | CF, 1k ohm |
| RS04 | 24366223 | CF, 22k ohm |
| RS05 | 24366223 | CF, 22k ohm |
| RS06 | 24366223 | CF, 22k ohm |
| RS07 | 24366473 | CF, 47k ohm |
| RS08 | 24366622 | CF, 6200 ohm |
| RS09 | 24366124 | CF, 120k ohm |
| RS10 | 24366473 | CF, 47k ohm |
| RS11 | 24366622 | CF, 6200 ohm |
| RS12 | 24360102 | CF, 1k ohm, 1/8W |
| RS13 | 24366102 | CF, 1k ohm |
| RS22 | 24366562 | CF, 5600 ohm |
| RS23 | 24366273 | CF, 27k ohm |
| RS24 | 24366183 | CF, 18k ohm |
| RS26 | 24366103 | CF, 10k ohm |
| RS27 | 24360103 | CF, 10k ohm, 1/8W |
| RS28 | 24366183 | CF, 18k ohm |
| RS29 | 24366183 | CF, 18k ohm |
| RS30 | 24366562 | CF, 5600 ohm |
| RS31 | 24366103 | CF, 10k ohm |
| RS32 | 24366822 | CF, 8200 ohm |
| RS34 | 24366103 | CF, 10k ohm |
| RS35 | 24366823 | CF, 82k ohm |
| RS38 | 24366103 | CF, 10k ohm |
| RS39 | 24366103 | CF, 10k ohm |
| RS40 | 24366104 | CF, 100k ohm |
| RS41 | 24366563 | CF, 56k ohm |
| RS44 | 24366823 | CF, 82k ohm |
| RS45 | 24366223 | CF, 22k ohm |
| RS46 | 24366103 | CF, 10k ohm |
| RS49 | 24366562 | CF, 5600 ohm |
| RS60 | 24360332 | CF, 3300 ohm, 1/8W |
| RS67 | 24366562 | CF, 5600 ohm |
| RS68 | 24360562 | CF, 5600 ohm, 1/8W |
| RS69 | 24366393 | CF, 39k ohm |
| RS70 | 24366393 | CF, 39k ohm |
| RS71 | 24366103 | CF, 10k ohm |
| RS75 | 24366393 | CF, 39k ohm |
| RX01 | 24366470 | CF, 47 ohm |
| RX02 | 24366470 | CF, 47 ohm |
| RX03 | 24367102 | CF, 1k ohm, ±2% |
| RX04 | 24366103 | CF, 10k ohm |
| RX08 | 24366473 | CF, 47k ohm |
| RX09 | 24366103 | CF, 10k ohm |
| RX10 | 24366473 | CF, 47k ohm |
| RX11 | 24366103 | CF, 10k ohm |
| RX12 | 24366183 | CF, 18k ohm |

| Location No. | Part No. | Description |
|---|---|---|
| RX13 | 24366221 | CF, 220 ohm |
| RX16 | 24366152 | CF, 1500 ohm |
| RX17 | 24366561 | CF, 560 ohm |
| RX18 | 24366821 | CF, 820 ohm |
| RX19 | 24366391 | CF, 390 ohm |
| RX20 | 24366121 | CF, 120 ohm |
| RX21 | 24366562 | CF, 5600 ohm |
| RX22 | 24366153 | CF, 15k ohm |
| RX24 | 24366102 | CF, 1k ohm |
| RX25 | 24366222 | CF, 2200 ohm |
| RX26 | 24366471 | CF, 470 ohm |
| RX27 | 24366561 | CF, 560 ohm |
| RX46 | 24366121 | CF, 120 ohm |

## COILS & TRANSFORMERS

| | | |
|---|---|---|
| L102 | 23262856 | Coil, PIF, TRF1452 |
| L105 | 23238928 | Coil, Peaking, TRF4339AC |
| L106 | 23261051 | Coil, RF Choke, AZ9246E |
| L151 | 23262881 | Coil, AFT, TRF1445 |
| L152 | 23262881 | Coil, AFT, TRF1445 |
| L161 | 23262951 | Coil, RF Choke, TRF1019 |
| L162 | 23261985 | Coil, RF Choke, TRF9221 |
| L201 | 23238923 | Coil, Peaking, TRF4829AC |
| L301 | 23221999 | Coil, RF Choke, TRF9209 |
| L407 | 23238934 | Coil, Peaking, TRF4109AC |
| L410 | 23221026 | Coil, RF Choke, AZ9004Y |
| L441 | 23222693 | Coil, Linearity, TLN2027 |
| L442 | 23222691 | Coil, Width, TLN2031 |
| ⚠ L462 | 23227517 | Coil, Deflection Yoke, TDY6280B |
| L501 | 23238916 | Coil, Peaking, TRF4330AC |
| L502 | 23237988 | Coil, Peaking, TRF4829AC |
| L503 | 23238944 | Coil, Peaking, TRF4201AC |
| L551 | 23250945 | Coil, 1H-Delay Matching, TRF5425 |
| L552 | 23250943 | Coil, IF Coil, TRF5426 |
| L601 | 23238921 | Coil, Peaking, TRF4120AC |
| L651 | 23252198 | Coil, SIF-2, TRF6702-G |
| L671 | 23238922 | Coil, Peaking, TRF4100AC |
| L672 | 23232983 | Coil, Variable, TRF3030 |
| L801 | 23221050 | Coil, RF Choke, TLN1015 |
| L802 | 23261975 | Coil, Choke, TRF9229 |
| L803 | 23222694 | Coil, Width, TLN2026 |
| L805 | 23261975 | Coil, Choke, TRF9229 |
| L806 | 23103981 | Coil, RF Choke, RH0630025 |
| L807 | 23261975 | Coil, Choke, TRF9229 |
| L808 | 23222694 | Coil, Width, TLN2026 |
| ⚠ L901 | 23200808 | Coil, Degaussing, TSB2206 |
| LA01 | 23237999 | Coil, Peaking, TRF4109AC |
| LA02 | 23237999 | Coil, Peaking, TRF4109AC |
| LB01 | 23237978 | Coil, Peaking, TRF4560AC |
| LM51 | 23252933 | Coil, Bell Filter, TRF5424 |
| LM52 | 23252934 | Coil, Demod Ident, TRF5423 |
| LM53 | 23252934 | Coil, Demod Ident, TRF5423 |
| LM54 | 23252934 | Coil, Demod Ident, TRF5423 |
| LM56 | 23237894 | Coil, Peaking, TRF4472AE |
| LM57 | 23238902 | Coil, Paeking, TRF4471AC |
| LM58 | 23238902 | Coil, Paeking, TRF4471AC |
| LN03 | 23238920 | Coil, Peaking, TRF4150AC |
| LR01 | 23232963 | Coil, Variable, TRF3055 |

| Location No. | Part No. | Description |
|---|---|---|
| LR02 | 23238722 | Coil, Peaking, TRF4822AI |
| LX02 | 23237980 | Coil, Peaking, TRF4390AC |
| LX03 | 23237978 | Coil, Peaking, TRF4560AC |
| ⚠ T401 | 23224978 | Transformer, Horiz. Drive, TLN1046 |
| ⚠ T461 | 23236013 | Transformer, Flyback, TFB5013AD |
| T801 | 23211962 | Line Filter, TRF3117 |
| ⚠ T802 | 23213767 | Transformer, Converter, TPW3057 |
| ⚠ T803 | 23213798 | Transformer, Remote Power, TPW1292 |
| TN01 | 23262910 | Coil, PIF Trap, TRF1427-G |
| TN02 | 23262843 | Coil, PIF Trap, TRF1457 |

## SEMICONDUCTORS

| Location No. | Part No. | Description |
|---|---|---|
| IC101 | B0356804 | IC, TA7680AP |
| IC211 | B0358000 | IC, TA7750P |
| IC501 | B0357050 | IC, TA7699AP |
| IC601 | B0356190 | IC, TA7630P |
| IC602 | 23119763 | IC, AN7158N |
| ICA01 | 23318046 | IC, TMP47C432N-8685 |
| ICA02 | B0428420 | IC, TMM842P |
| ICA02 | or B0428430 | IC, TMM842AP |
| ICA03 | B0349250 | IC, TA75393S |
| ICB01 | 23119450 | IC, PD6105C |
| ICM01 | 23119724 | IC, M51397AP |
| ICR01 | 23119566 | IC, μPC1474HA |
| ICS01 | B0474370 | IC, TC40174BP |
| ICS11 | 23119448 | IC, AN5560 |
| ICX01 | 23119371 | IC, TDA4560 |
| ICX02 | B0470662 | IC, TC4066BP |
| Q161 | A6708871 | Transistor, 2SC388ATM |
| Q201 | A6317440 | Transistor, 2SC1815-Y |
| Q202 | A6509120 | Transistor, 2SA562TM-O |
| Q203 | A6317440 | Transistor, 2SC1815-Y |
| Q204 | A6534040 | Transistor, 2SA1015-Y |
| Q205 | A6534040 | Transistor, 2SA1015-Y |
| Q206 | A6534040 | Transistor, 2SA1015-Y |
| Q207 | A6317440 | Transistor, 2SC1815-Y |
| Q208 | A6317440 | Transistor, 2SC1815-Y |
| Q212 | A6534040 | Transistor, 2SA1015-Y |
| Q213 | A6534040 | Transistor, 2SA1015-Y |
| Q214 | A6317440 | Transistor, 2SC1815-Y |
| Q215 | A6002030 | Transistor, RN1203 |
| Q217 | A6317440 | Transistor, 2SC1815-Y |
| Q303 | A6319576 | Transistor, 2SC2073 FA-4 |
| Q306 | A6358055 | Transistor, 2SC3182N FA-1 |
| Q306B | A8012346 | Spacer For Tr., AC238 |
| Q307 | A6546025 | Transistor, 2SA1265N FA-1 |
| Q371 | A6317440 | Transistor, 2SC1815-Y |
| Q372 | A6317440 | Transistor, 2SC1815-Y |
| Q402 | A678971D | Transistor, 2SC1569 FA-5 |
| ⚠ Q404 | A6848103 | Transistor, 2SD871 |
| Q405 | A6317460 | Transistor, 2SC1815-GR |
| Q405 | or A6317440 | Transistor, 2SC1815-Y |
| Q406 | A6842185 | Transistor, 2SD553-Y |
| Q505 | A6319400 | Transistor, 2SC2068 |
| Q507 | A6319400 | Transistor, 2SC2068 |
| Q509 | A6319400 | Transistor, 2SC2068 |
| Q603 | A6317440 | Transistor, 2SC1815-Y |
| Q604 | A6317440 | Transistor, 2SC1815-Y |
| Q605 | A671656A | Transistor, 2SC495-Y |
| Q606 | A6534040 | Transistor, 2SA1015-Y |
| Q671 | A6317440 | Transistor, 2SC1815-Y |
| Q672 | A6317440 | Transistor, 2SC1815-Y |
| Q673 | A6319300 | Transistor, 2SC1959-Y |
| Q674 | A6317440 | Transistor, 2SC1815-Y |
| Q675 | A6317440 | Transistor, 2SC1815-Y |
| ⚠ Q801 | A6865553 | Transistor, 2SD1279 |
| Q802 | A6533725 | Transisotr, 2SA1012-O |
| Q802 | or A6533730 | Transistor, 2SA1012-Y |
| Q803 | A6319280 | Transistor, 2SC1959-O |
| Q804 | A6534040 | Transistor, 2SA1015-Y |
| ⚠ Q805 | A7800720 | Transistor, SF0R1B41 |
| Q806 | A6546025 | Transistor, 2SA1265N FA-1 |
| Q807 | A6325020 | Transistor, 2SC2230-GR |
| Q830 | A6317440 | Transistor, 2SC1815-Y |
| ⚠ Q835 | A7804500 | SCR, SF5J42 |
| QA04 | A6534040 | Transistor, 2SA1015-Y |
| QA05 | A6534040 | Transistor, 2SA1015-Y |
| QA06 | A6534040 | Transistor, 2SA1015-Y |
| QA07 | A6048370 | Transistor, 2SK30ATM-GR |
| QA08 | A6317440 | Transistor, 2SC1815-Y |
| QA09 | A6534040 | Transistor, 2SA1015-Y |
| QA10 | A6534040 | Transistor, 2SA1015-Y |
| QA13 | A6734590 | Transistor, 2SC752GTM-Y |
| QA14 | A6734590 | Transistor, 2SC752GTM-Y |
| QA15 | A6534040 | Transistor, 2SA1015-Y |
| QA16 | A6534040 | Transistor, 2SA1015-Y |
| QB05 | A6317440 | Transistor, 2SC1815-Y |
| QB06 | A6317440 | Transistor, 2SC1815-Y |
| QB10 | A6317460 | Transistor, 2SC1815-GR |
| QB11 | A6534060 | Transistor, 2SA1015-GR |
| QB12 | A6317460 | Transistor, 2SC1815-GR |
| QB20 | A6317460 | Transistor, 2SC1815-GR |
| QE01 | A6317440 | Transistor, 2SC1815-Y |
| QE02 | A6317440 | Transistor, 2SC1815-Y |
| QE03 | A6333310 | Transistor, 2SC2655-O |
| QE03 | or A6333320 | Transistor, 2SC2655-Y |
| QE04 | A6532320 | Transistor, 2SA940 |
| QE05 | A6317440 | Transistor, 2SC1815-Y |
| QE06 | A6314440 | Transistor, 2SC1627-Y |
| QE07 | A6534040 | Transistor, 2SA1015-Y |
| QG05 | A6317440 | Transistor, 2SC1815-Y |
| QG06 | A6317440 | Transistor, 2SC1815-Y |
| QG07 | A6317440 | Transistor, 2SC1815-Y |
| QG08 | A6317440 | Transistor, 2SC1815-Y |
| QG09 | A6317440 | Transistor, 2SC1815-Y |
| QM08 | A6317440 | Transistor, 2SC1815-Y |
| QM11 | A6317440 | Transistor, 2SC1815-Y |
| QM12 | A6534040 | Transistor, 2SA1015-Y |
| QM13 | A6317440 | Transistor, 2SC1815-Y |
| QN03 | A6317440 | Transistor, 2SC1815-Y |
| QN05 | A6317460 | Transistor, 2SC1815-GR |
| QN06 | A6534040 | Transistor, 2SA1015-Y |
| QN13 | 23114454 | Transistor, DTC144E-S |
| QN13 | or A6002040 | Transistor, RN1204 |
| QN16 | 23114454 | Transistor, DTC144E-S |
| QN16 | or A6002040 | Transistor, RN1204 |
| QN20 | A6317440 | Transistor, 2SC1815-Y |
| QS02 | A6317440 | Transistor, 2SC1815-Y |
| QS03 | A6317460 | Transistor, 2SC1815-GR |
| QS03 | or A6317440 | Transistor, 2SC1815-Y |
| QS04 | A6317460 | Transistor, 2SC1815-GR |
| QS04 | or A6317480 | Transistor, 2SC1815-BL |
| QS05 | A6534040 | Transistor, 2SA1015-Y |
| QS06 | A6317440 | Transistor, 2SC1815-Y |

| Location No. | Part No. | Description |
|---|---|---|
| QS07 | A6534040 | Transistor, 2SA1015-Y |
| QS12 | A6317440 | Transistor, 2SC1815-Y |
| QS13 | A6317440 | Transistor, 2SC1815-Y |
| QS14 | A6317440 | Transistor, 2SC1815-Y |
| QS16 | A6317440 | Transistor, 2SC1815-Y |
| QS17 | A6317440 | Transistor, 2SC1815-Y |
| QS18 | A6317440 | Transistor, 2SC1815-Y |
| QS19 | A6002030 | Transistor, RN1203 |
| QS19 | or 23114455 | Transistor, DTC124E-S |
| QS20 | A6002030 | Transistor, RN1203 |
| QS20 | or 23114455 | Transistor, DTC124E-S |
| QS21 | A6317440 | Transistor, 2SC1815-Y |
| QS22 | A6002030 | Transistor, RN1203 |
| QS22 | or 23114455 | Transistor, DTC124E-S |
| QS23 | A6534040 | Transistor, 2SA1015-Y |
| QS24 | A6317440 | Transistor, 2SC1815-Y |
| QS25 | A6002030 | Transistor, RN1203 |
| QS25 | or 23114455 | Transistor, DTC124E-S |
| QS26 | A6002030 | Transistor, RN1203 |
| QS26 | or 23114455 | Transistor, DTC124E-S |
| QX03 | A6317440 | Transistor, 2SC1815-Y |
| QX04 | A6317440 | Transistor, 2SC1815-Y |
| QX06 | A6002040 | Transistor, RN1204 |
| QX06 | or 23114454 | Transistor, DTC144E-S |
| QX07 | A6534040 | Transistor, 2SA1015-Y |
| QX08 | A6317440 | Transistor, 2SC1815-Y |
| QX09 | A6534040 | Transistor, 2SA1015-Y |
| QX10 | A6317440 | Transistor, 2SC1815-Y |
| D202 | A7150258 | Diode, 1SS176 |
| D203 | A7150258 | Diode, 1SS176 |
| D204 | A7150258 | Diode, 1SS176 |
| D205 | A7150258 | Diode, 1SS176 |
| D206 | 23115535 | Diode, OA91 |
| D207 | A7246711 | Diode, 1S1555 (TV) |
| D208 | A7246711 | Diode, 1S1555 (TV) |
| D209 | A7246711 | Diode, 1S1555 (TV) |
| D210 | A7246711 | Diode, 1S1555 (TV) |
| D240 | A7150041 | Diode, 1SS104 |
| D241 | A7150258 | Diode, 1SS176 |
| D242 | A7150258 | Diode, 1SS176 |
| D260 | A7150258 | Diode, 1SS176 |
| D261 | A7150258 | Diode, 1SS176 |
| D301 | A7150258 | Diode, 1SS176 |
| D302 | 23115690 | Diode, GU-3C |
| D303 | A7246711 | Diode, 1S1555 (TV) |
| D304 | A7246711 | Diode, 1S1555 (TV) |
| D305 | A7568475 | Diode, TVR-2D |
| D306 | A7568487 | Diode, TVR-2G |
| D307 | A7568615 | Diode, 1S1886 |
| D308 | A7572200 | Diode, 1S1942 |
| D310 | A7110411 | Diode, Zener, 05Z12Y |
| D311 | A7568615 | Diode, 1S1886 |
| D315 | A7110160 | Diode, Zener, 05Z7.5Y |
| D371 | A7110017 | Diode, Zener, 05Z5.6Y |
| D401 | A7150258 | Diode, 1SS176 |
| D403 | A7110412 | Diode, Zener, 05Z12Z |
| D406 | A7978850 | Diode, S5295G |
| D408 | A7568300 | Diode, 1S1835 |
| D448 | A7568300 | Diode, 1S1835 |
| D610 | A7150258 | Diode, 1SS176 |
| D612 | A7110462 | Diode, Zener, 05Z13Y |
| D613 | A7150258 | Diode, 1SS176 |
| D614 | A7150258 | Diode, 1SS176 |
| D615 | A7150258 | Diode, 1SS176 |

| Location No. | Part No. | Description |
|---|---|---|
| D616 | A7150258 | Diode, 1SS176 |
| D681 | A7110208 | Diode, Zener, 05Z8.2Y |
| D804 | A7978855 | Diode, S5295J |
| D805 | A7978855 | Diode, S5295J |
| D806 | 23115690 | Diode, GU-3C |
| D807 | A7568300 | Diode, 1S1835 |
| D808 | A7568300 | Diode, 1S1835 |
| D809 | A7568300 | Diode, 1S1835 |
| D810 | A7568300 | Diode, 1S1835 |
| D811 | A7978850 | Diode, S5295G |
| D812 | A7246711 | Diode, 1S1555 (TV) |
| D813 | A7246711 | Diode, 1S1555 (TV) |
| ⚠ D814 | A7110160 | Diode, Zener, 05Z7.5Y |
| D815 | A7580660 | Diode, 3JH61 |
| D816 | 23115586 | Diode, GU3SY |
| D817 | A7580660 | Diode, 3JH61 |
| D818 | A7568300 | Diode, 1S1835 |
| D820 | A7246602 | Diode, 1S1553 (TV) |
| D822 | A7110075 | Diode, Zener, 05Z6.2X |
| D822 | or A7110077 | Diode, Zener, 05Z6.2Z |
| D822 | or A7110076 | Diode, Zener, 05Z6.2Y |
| ⚠ D831 | A7568410 | Diode, TVR-4J |
| ⚠ D832 | A7568410 | Diode, TVR-4J |
| ⚠ D833 | A7568410 | Diode, TVR-4J |
| ⚠ D834 | A7568410 | Diode, TVR-4J |
| D836 | A7568410 | Diode, TVR-4J |
| D837 | A7568410 | Diode, TVR-4J |
| D839 | A7110663 | Diode, Zener, 05Z24X |
| D861 | 23115586 | Diode, GU3SY |
| DA04 | A7150258 | Diode, 1SS176 |
| DA09 | A7150258 | Diode, 1SS176 |
| DA10 | A7150258 | Diode, 1SS176 |
| DA11 | A7150258 | Diode, 1SS176 |
| DA12 | A7150258 | Diode, 1SS176 |
| DA13 | A7150258 | Diode, 1SS176 |
| DA14 | A7150258 | Diode, 1SS176 |
| DA16 | A7150258 | Diode, 1SS176 |
| DA17 | A7150258 | Diode, 1SS176 |
| DA21 | A7150258 | Diode, 1SS176 |
| DA22 | A7150258 | Diode, 1SS176 |
| DA24 | A7150258 | Diode, 1SS176 |
| DA25 | A7150258 | Diode, 1SS176 |
| DA30 | 23115878 | Diode, Zener, μPC574JC |
| DA31 | A7246711 | Diode, 1S1555 (TV) |
| DA40 | A7150258 | Diode, 1SS176 |
| DA55 | A8616160 | Diode(LED), TLOG116, Green |
| DB24 | A7110041 | Diode, Zener, 05Z5.1Y |
| DB25 | A7150258 | Diode, 1SS176 |
| DB44 | A7150258 | Diode, 1SS176 |
| ⚠ DE01 | 23115571 | Photo Coupler, PC-510 |
| DE02 | A7246711 | Diode, 1S1555 (TV) |
| DE03 | A7568615 | Diode, 1S1886 |
| DE04 | A7568615 | Diode, 1S1886 |
| DE05 | A7568615 | Diode, 1S1886 |
| DE06 | A7568615 | Diode, 1S1886 |
| DE07 | A7110041 | Diode, Zener, 05Z5.1Y |
| DE08 | A7110208 | Diode, Zener, 05Z8.2Y |
| DE55 | A8600606 | Diode(LED), TLR113AD, Red |
| DG55 | A8605702 | Diode(LED), TLG114A |
| DM01 | A7150258 | Diode, 1SS176 |
| DM02 | A7246711 | Diode, 1S1555 (TV) |
| DM03 | A7246711 | Diode, 1S1555 (TV) |
| DM05 | A7110411 | Diode, Zener, 05Z12Y |

| Location No. | Part No. | Description |
|---|---|---|
| DM06 | A7150258 | Diode, 1SS176 |
| DM07 | A7150258 | Diode, 1SS176 |
| DM08 | A7150258 | Diode, 1SS176 |
| DM09 | A7150258 | Diode, 1SS176 |
| DM10 | A7150258 | Diode, 1SS176 |
| DM11 | A7150258 | Diode, 1SS176 |
| DM12 | A7150258 | Diode, 1SS176 |
| DM21 | A7150258 | Diode, 1SS176 |
| DN01 | A7288601 | Diode, 1S2186 FA-1 |
| DN02 | A7288601 | Diode, 1S2186 FA-1 |
| DN03 | A7288601 | Diode, 1S2186 FA-1 |
| DN04 | A7288601 | Diode, 1S2186 FA-1 |
| DN05 | A7288601 | Diode, 1S2186 FA-1 |
| DN06 | A7288601 | Diode, 1S2186 FA-1 |
| DN07 | A7288601 | Diode, 1S2186 FA-1 |
| DN10 | A7288601 | Diode, 1S2186 FA-1 |
| DN14 | A7288601 | Diode, 1S2186 FA-1 |
| DN15 | A7288601 | Diode, 1S2186 FA-1 |
| DN16 | A7288601 | Diode, 1S2186 FA-1 |
| DN17 | A7288601 | Diode, 1S2186 FA-1 |
| DN18 | A7288601 | Diode, 1S2186 FA-1 |
| DN19 | A7288601 | Diode, 1S2186 FA-1 |
| DN20 | A7110016 | Diode, Zener, 05Z5.6X |
| DN21 | A7150258 | Diode, 1SS176 |
| DN22 | A7288601 | Diode, 1S2186 FA-1 |
| DN23 | A7150258 | Diode, 1SS176 |
| DN71 | A7288601 | Diode, 1S2186 FA-1 |
| DR01 | A8652035 | Diode, Photo, TPS703 |
| DS01 | A7150258 | Diode, 1SS176 |
| DS02 | A7150258 | Diode, 1SS176 |
| DS03 | A7246711 | Diode, 1S1555 (TV) |
| DS04 | A7246711 | Diode, 1S1555 (TV) |
| DS05 | A7150258 | Diode, 1SS176 |
| DS12 | A7150258 | Diode, 1SS176 |
| DS15 | A7150258 | Diode, 1SS176 |
| DS16 | A7150258 | Diode, 1SS176 |
| DS17 | A7150258 | Diode, 1SS176 |
| DS18 | A7150258 | Diode, 1SS176 |
| DS20 | A7246711 | Diode, 1S1555 (TV) |
| DS55 | A8616160 | Diode(LED), TLOG116, Orange |

## MISECLLANEOUS

| Location No. | Part No. | Description |
|---|---|---|
| ⚠ F801 | 23144959 | Fuse, 3.15A |
| F801A | 23165102 | Fuse Holder |
| ⚠ F802 | 23144970 | Fuse, 1.6A |
| F802A | 23165102 | Fuse Holder |
| K902 | 23120760 | Remote Hand Unit, CT-9129 |
| L462A | 23199318 | Compensator, DY, TC-C |
| L462B | 23199314 | Compensator, DY, TC-E |
| L462C | 23199482 | Compensator, DY, TC-B |
| ⚠ P001 | 23142601 | Aerial Terminal Board, AT909S |
| ⚠ P002 | 23142592 | Terminal Board |
| P003 | 23161808 | Terminal 4P |
| P661 | 23166180 | Headphone Jack |
| ⚠ P801 | 23176797 | Power Cord |
| P803 | 23164725 | Plug, 2P |
| S001 | 23145644 | Switch, Slide, 2C2P |
| S201 | 23145563 | Switch, Push, 1C1P |
| S202 | 23145571 | Switch, Push, 1P |
| ⚠ S801 | 23145583 | Switch, Push, 2C2P |
| SA01 | 23145563 | Switch, Push, 1C1P |
| SA02 | 23145563 | Switch, Push, 1C1P |
| SA03 | 23145563 | Switch, Push, 1C1P |
| SA04 | 23145563 | Switch, Push, 1C1P |
| SA05 | 23145563 | Switch, Push, 1C1P |
| SA06 | 23145563 | Switch, Push, 1C1P |
| SA07 | 23145563 | Switch, Push, 1C1P |
| SA08 | 23145563 | Switch, Push, 1C1P |
| SA09 | 23145563 | Switch, Push, 1C1P |
| ⚠ V901A | 23901880 | Socket, CRT |
| V901M | 23102989 | Magnet, Purity-Convergence, MAG1006 |
| W201 | 23250951 | Coil, Delay Line , TRF2048 |
| W661 | 23151391 | Speaker, SPK-1133, 50x120 mm, 8 ohm |
| W662 | 23151391 | Speaker, SPK-1133, 50x120 mm, 8 ohm |
| X501 | 23153979 | Crystal, 4.43MHz |
| X502 | 23153797 | 1H-Delay Line, EN645A41T |
| XN01 | 23153961 | Crystal, 3.58MHz |
| Z101 | A5611320 | PIF SAW Filter, F1057 |
| Z201 | 23107911 | Ceramic Video Trap, 5.5to6MHz, TCF1019 |
| Z671 | 23107947 | Ceramic Filter, 5.5MHz, SFE5.5MBF |
| Z672 | 23107948 | Ceramic Filter, 6.0MHz, SFE6.0MBF |
| Z673 | 23107949 | Ceramic Filter, 6.5MHz, SFE6.5MBF |
| Z674 | 23107948 | Ceramic Filter, 6.0MHz, SFE6.0MBF |
| Z675 | 23107897 | Ceramic Video Trap, 5.5MHz, TCF1023 |
| ZA01 | 23153949 | Ceramic Resonator, 4MHz, TCR1003 |
| ZA12 | 24094834 | Capacitor Block, 220pFx4, 50V |
| ZA13 | 24094742 | Capacitor Block, 1000pFx4, 50V |
| ZN01 | 23107980 | Ceramic Filter, 4.5MHz, SFE4.5MB |
| ZN02 | 23107913 | Ceramic Video Trap, 6.5MHz, TCF1018 |
| ZN03 | 23252876 | Coil, ARC Trap, TRF2026 |
| ZN04 | 23107976 | Ceramic Video Trap, 4.5MHz, TPS4.5MC2 |

## PC BOARD ASSEMBLIES

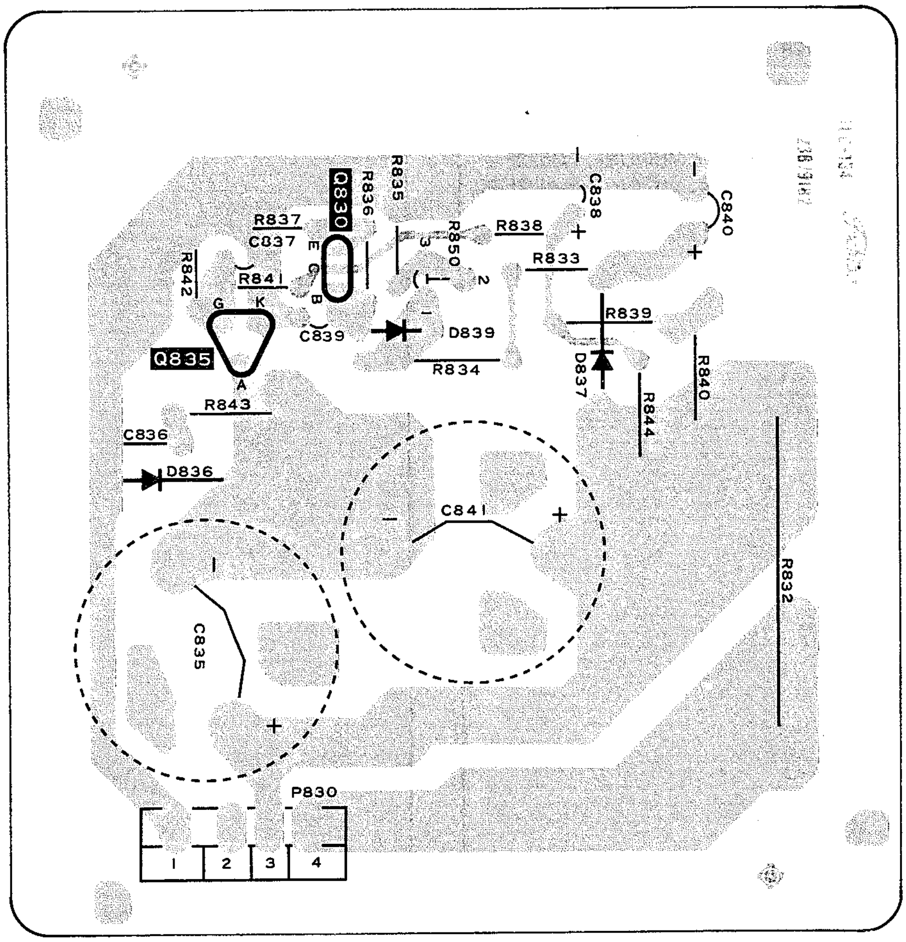
| Location No. | Part No. | Description |
|---|---|---|
| U001 | 23169595 | Back. Terminal Board, PW4625 |
| U501A | 23169425 | Secam/Chroma Board, PW5699-1 (Same as PW4628-1) |
| U501B | 23332406 | System Switch Board, PW5699-2 |
| U801 | 23169423 | Power-2 Board, PW4730 |
| U902 | 23332428 | Main Board, PW5778 |
| U903A | 23169428 | Power Board, PW4621-1 |
| U903B | 23169427 | AV. Sound Board, PW4621-2 |
| U903C | 23169426 | CRT Drive Board, PW4621-3 |
| UA01A | 23169279 | Control Board, PW4624-1 |
| UA01B | 23169278 | Head Phone Board, PW4624-2 |

| Location No. | Part No. | Description |
|---|---|---|
| **PICTURE TUBE** | | |
| ⚠ V901 | A5433139 | Picture Tube,<br>A66JLH70X(W), SVC |
| **TUNER** | | |
| H001 | 23121794 | Tuner, VHF/UHF, EG522F |
| H001 | or 23121776 | Tuner, VHF/UHF, EG522FX1 |

| Location No. | Part No. | Description |
|---|---|---|

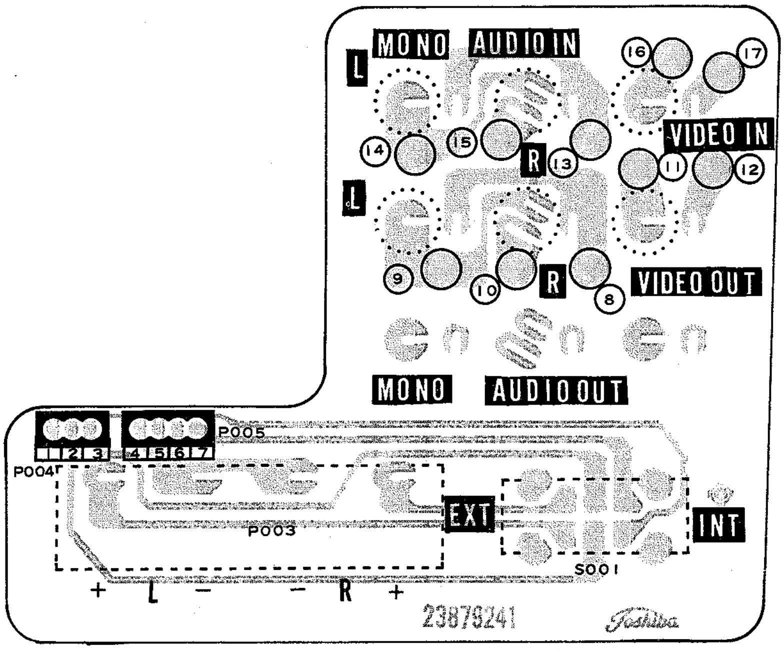
## POWER-2 BOARD PW4730

(Foil Side)


Q830
R836
R835
R837
C837
E
C
B
R842
R841
G
K
Q835
A
C839
D839
R834
R843
C836
D836
C838
R850
R838
R833
3
2
1
C840
R839
D837
R840
R844
C841
C835
R832
P830
1
2
3
4

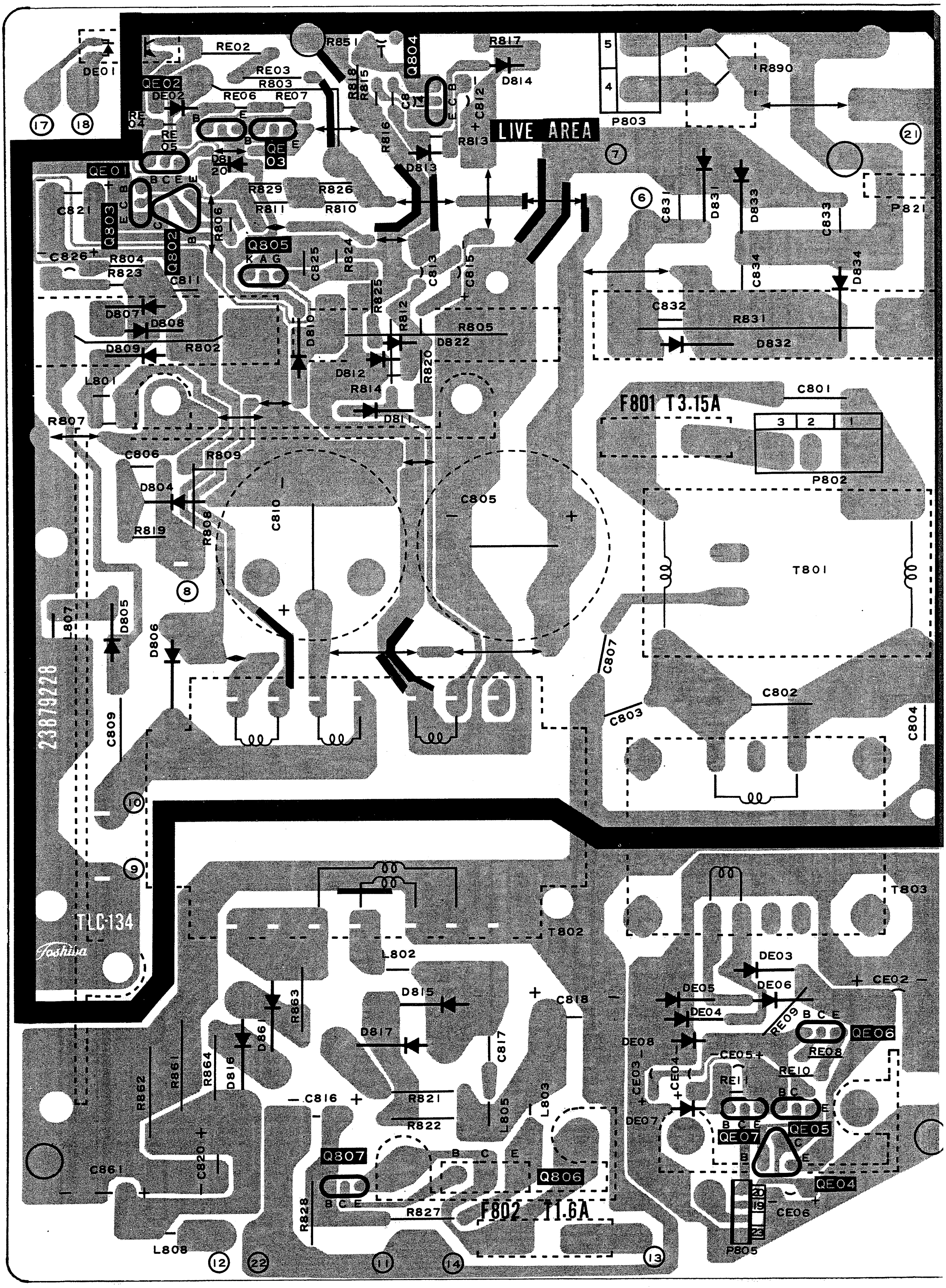
## BACK TERMINAL BOARD PW4625

(Foil Side)


MONO
AUDIO IN
L
⑯
⑰
VIDEO IN
⑭
⑮
R
⑬
⑪
⑫
L
⑨
⑩
R
⑧
VIDEO OUT
MONO
AUDIO OUT
P005
P004
1 2 3 4 5 6 7
P003
EXT
INT
S001
+ L – – R +
23879241

# POWER BOARD PW4621-1

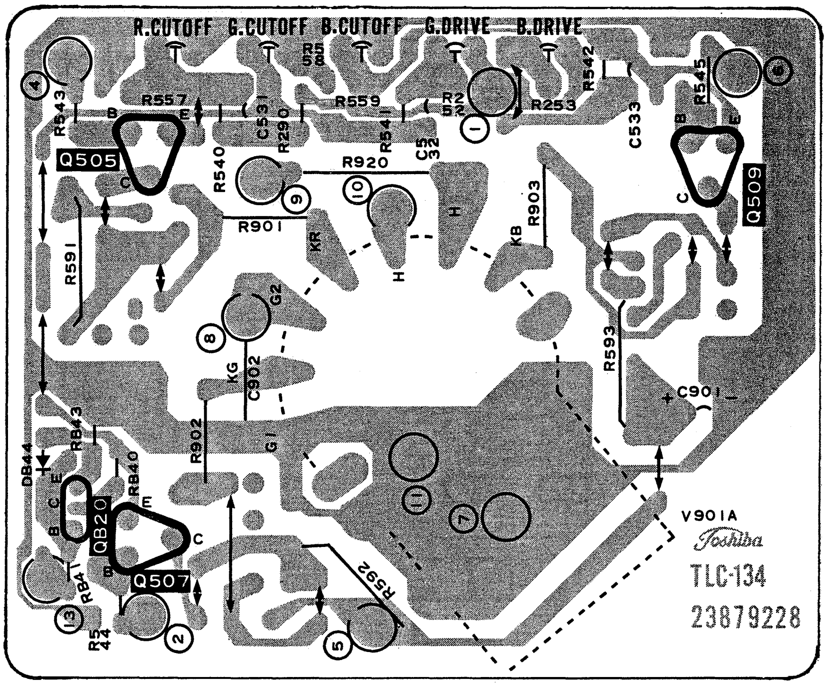
(Foil Side)



DE01
RE02
QE02
DE02
RE03
R803
RE06
RE07
RE04
RE05
QE03
QE01
D820
R851
R818
R815
Q804
C814
C812
R817
D814
R816
R813
LIVE AREA
5
4
P803
R890
⑰
⑱
⑦
⑥
㉑
C821
Q803
Q802
R829
R826
R811
R810
R806
Q805
K A G
C825
R824
C813
C815
C831
D831
D833
C833
P821
C826
R804
R823
C811
C834
D834
D807
D808
D809
R802
D810
R825
R812
R805
D822
C832
R831
D832
D812
R820
R814
D811
L801
R807
C801
F801 T3.15A
3
2
1
P802
C806
R809
D804
R808
R819
C810
C805
T801
⑧
D805
D806
807
23879228
C809
C807
C803
C802
C804
⑩
⑨
T802
T803
TLC-134
Toshiba
L802
DE03
DE05
DE06
CE02
D815
C818
DE04
RE09
QE06
D817
DE08
RE08
D863
R863
D816
CE05
RE10
CE03
CE04
RE11
R862
R861
R864
C817
C816
R821
L805
L803
DE07
R822
QE07
QE05
C861
C820
Q807
Q806
QE04
CE06
R828
B C E
R827
F802 T1.6A
P805
L808
⑫
㉒
⑪
⑭
⑬

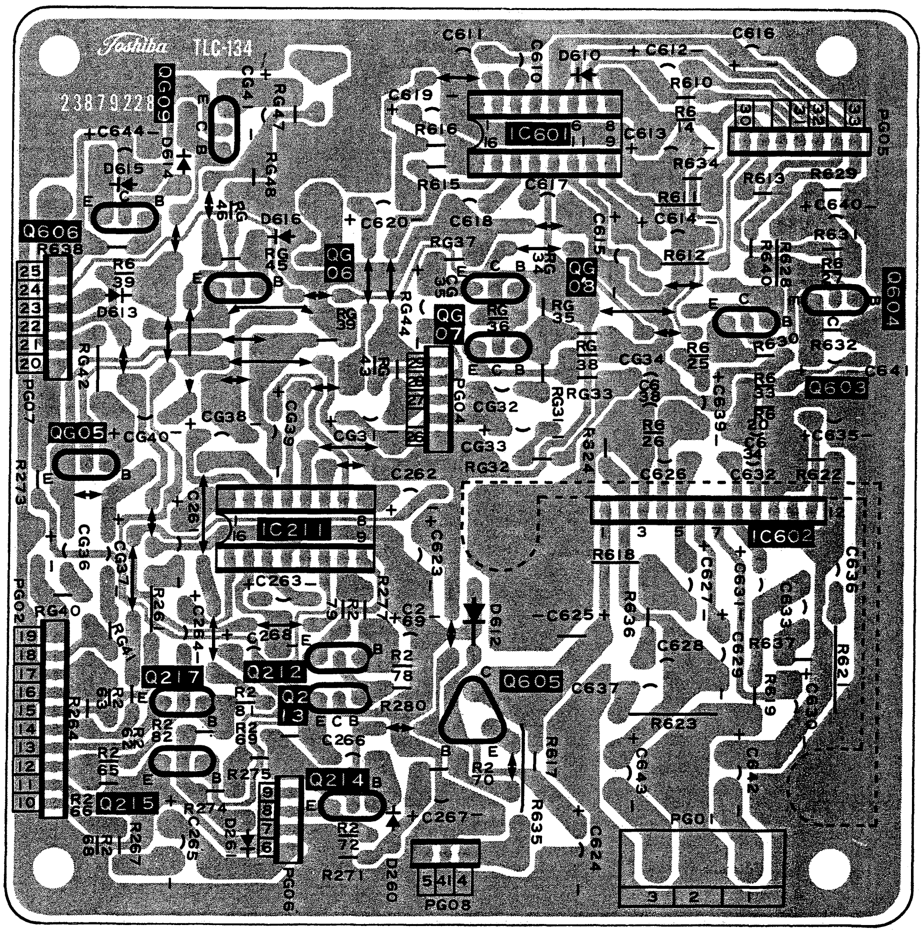
# CRT DRIVE BOARD PW4621-3

(Foil Side)


R.CUTOFF
G.CUTOFF
B.CUTOFF
G.DRIVE
B.DRIVE
R558
R542
R543
R557
C531
R290
R559
R252
R253
R545
C533
Q505
R540
R920
R541
C532
Q509
R901
KR
H
KB
R903
R591
G2
R593
C902
KG
C901
R902
G1
RB43
DB44
RB40
QB20
Q507
RB41
R544
R592
V901A
Toshiba
TLC-134
23879228

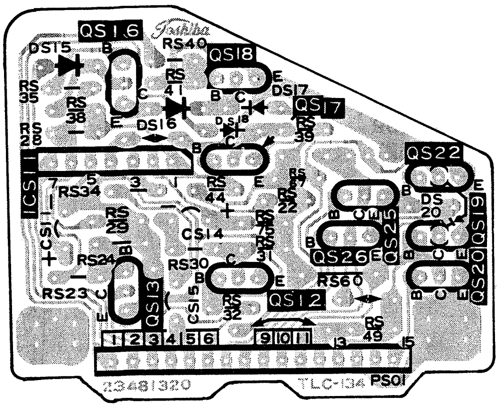
# A/V SOUND BOARD PW4621-2

(Foil Side)


Toshiba
TLC-134
23879228
C611
C610
D610
C612
C616
R610
QG09
CG4
RG47
C619
R616
IC601
C613
R614
PG05
C644
D614
RG48
R615
C617
R634
R613
R629
D615
RG46
D616
C620
C618
R611
C614
C640
Q606
R638
RG45
QG06
RG37
C615
R612
R640
R628
R631
R639
D613
RG39
RG44
CG35
RG36
QG08
RG35
R627
Q604
QG07
R630
R632
RG42
PG07
RG43
RG38
CG34
R625
Q603
C641
RG33
RG31
C639
R633
R620
PG04
CG32
CG38
CG39
CG31
CG33
R626
C635
QG05
CG40
R324
C626
C632
R622
R273
RG32
C262
C261
IC211
C623
IC602
CG36
CG37
R618
C627
C631
C636
PG02
RG40
C263
R276
R277
C269
D612
C625
R636
C633
RG41
R268
R264
C264
C268
Q212
R278
C628
C629
R637
R621
Q217
R263
R281
Q213
R280
Q605
C637
R619
C630
R282
R279
R266
C266
R623
R617
R265
R275
Q214
R270
C643
C642
Q215
R274
D261
R272
C267
R635
PG01
R269
R267
C265
PG06
R271
D260
C624
PG08

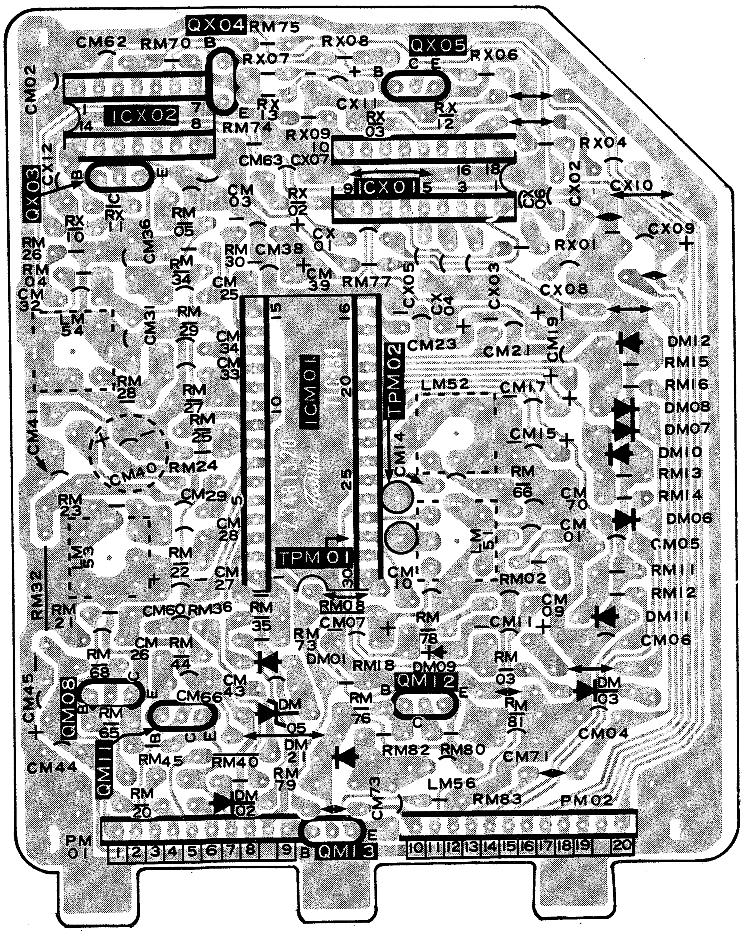
## SYS. SW. BOARD PW5699-2

(Foil Side)


QS16
RS40
DS15
QS18
RS35
RS41
RS38
DS17
DS16
DS18
QS17
RS28
RS39
ICS11
RS34
RS44
RS27
RS22
QS22
RS29
DS20
CS11
CS14
RS75
RS31
QS25
QS19
RS24
QS26
QS20
RS30
RS23
QS13
CS15
RS32
QS12
RS60
RS49
1 2 3 4 5 6
9 10 11
13
15
23481320
TLC-134
PS01

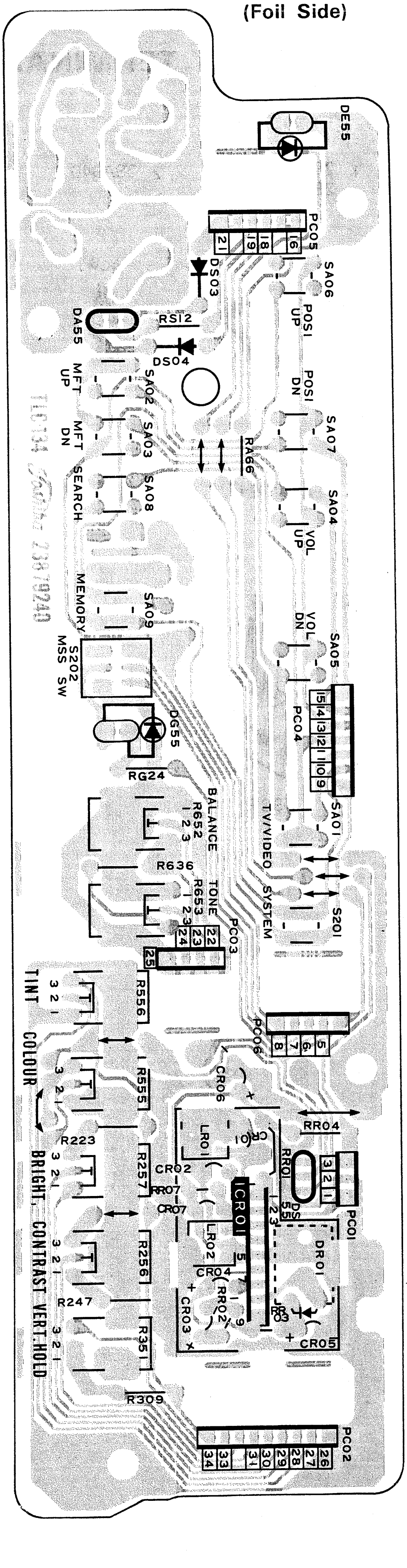
## SECAM CHROMA BOARD PW5699-1

(Foil Side)


QX04
RM75
CM62
RM70
RX08
QX05
RX07
RX06
CM02
ICX02
RX13
CX11
RX03
RX12
RM74
RX09
RX04
CM63
CX07
CX12
QX03
ICX01
CX06
CX02
CX10
RM10
CM03
RX02
RM05
CX01
RX01
CX09
RM26
RM04
CM36
CM38
RM30
RM34
CM25
CM32
CM39
RM77
CX05
CX04
CX03
CX08
LM54
CM31
RM29
CM34
CM33
CM23
CM21
CM19
DM12
ICM01
TPM02
RM15
RM28
RM27
RM25
LM52
CM17
RM16
DM08
DM07
CM41
CM40
RM24
CM14
CM15
DM10
RM13
RM14
RM23
CM29
RM66
CM70
DM06
CM28
CM01
CM05
LM53
RM22
CM27
TPM01
LM51
RM11
RM12
RM32
RM21
CM60
RM36
RM35
RM08
RM02
CM09
DM11
CM26
RM44
RM73
CM07
RM78
CM11
CM06
RM68
DM01
RM18
DM09
RM03
CM45
QM08
CM43
CM66
QM12
DM03
RM65
DM05
RM76
RM81
CM04
QM11
RM45
RM40
DM21
RM82
RM80
CM71
CM44
RM79
LM56
RM20
DM02
CM73
RM83
PM02
PM01
QM13
1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19 20
23481320

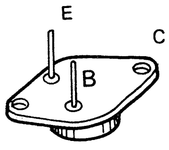
## CONTROL BOARD PW4624-1

(Foil Side)

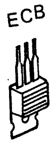

DE55
PC05
21 19 18 16
DS03
SA06
POSI UP
DA55
RS12
DS04
MFT UP
SA02
POSI DN
MFT DN
SA03
RA66
SA07
SEARCH
SA08
SA04
VOL UP
MEMORY
SA09
VOL DN
SA05
S202 MSS SW
PC04
15 14 13 12 11 10 9
DG55
RG24
BALANCE
R652
SA01
TV/VIDEO
R636
TONE
R653
SYSTEM
S201
PC03
22 23 24 25
TINT
R556
PC06
8 7 6 5
COLOUR
R555
CR06
RR04
LR01
CR01
RR01
R223
R257
CR02
RR07
CR07
ICR01
DS55
3 2 1
PC01
DR01
LR02
R256
CR04
BRIGHT.
CONTRAST
VERT. HOLD
R247
CR03
RR02
RR03
R351
CR05
R309
PC02
34 33 31 30 29 28 27 26
TLC134
23879240

# TERMINAL VIEW OF TRANSISTOR, etc.

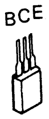
① 2SD871
2SD1279



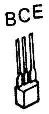
② 2SA940



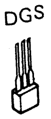
③ 2SC2482
2SC752GTM
2SC2230
2SC2655



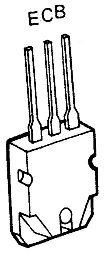
④ 2SA1015
2SC388ATM
2SC1815
2SA562TM
2SC1959
2SC1627



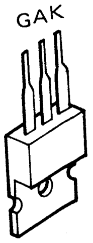
⑤ 2SK30ATM



⑥ 2SC1265N
2SC3182N

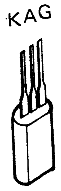


⑦ SF5J42



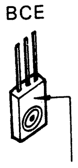
(SCR)

⑧ SFOR1B41



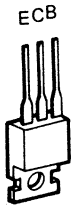
(SCR)

⑨ 2SC495

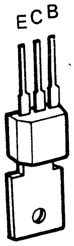


Type name
printed

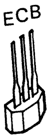
⑩ 2SD553
2SC1569
2SC2073
2SA1012



⑪ 2SC2068



⑫ RN1203
RN1204
DTC144ES
DTC124ES



## MEMO

MEMO

# SCHEMATIC DIAGRAM <MODEL 289X4Y> (1/2)

**NOTE:** The parts identified by the international hazard symbols are critical for safety. Replace only with part number specified.

### OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chassis ground, line voltage 220 volts, colour bar signal.
2. Voltages reading may vary ±20%.
3. The schematic shown is representative only.
4. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
5. Check FINE TUNING, BRIGHTNESS, CONTRAST and COLOUR controls for best picture, make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position.
6. Waveforms are taken using a standard colour bar signal.

### NOTES:

1. D.C. resistance value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits are subject to change without notice.
3. ● : Solder links.

### EXPRESSION

### VALUE OF RESISTOR, CAPACITOR and INDUCTOR

1. Resistance is shown in ohm, k=1,000, M=100,000.
2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in mfd and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in $\mu$H, and the values less than 1 in H.

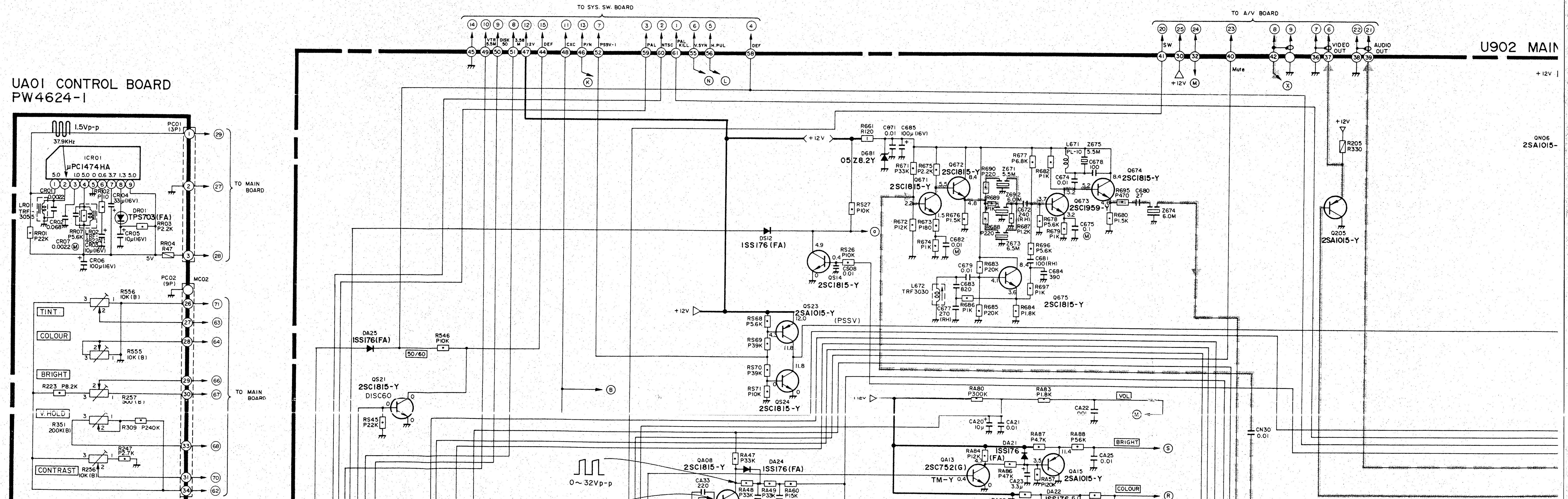
**RESISTOR**

Table 1

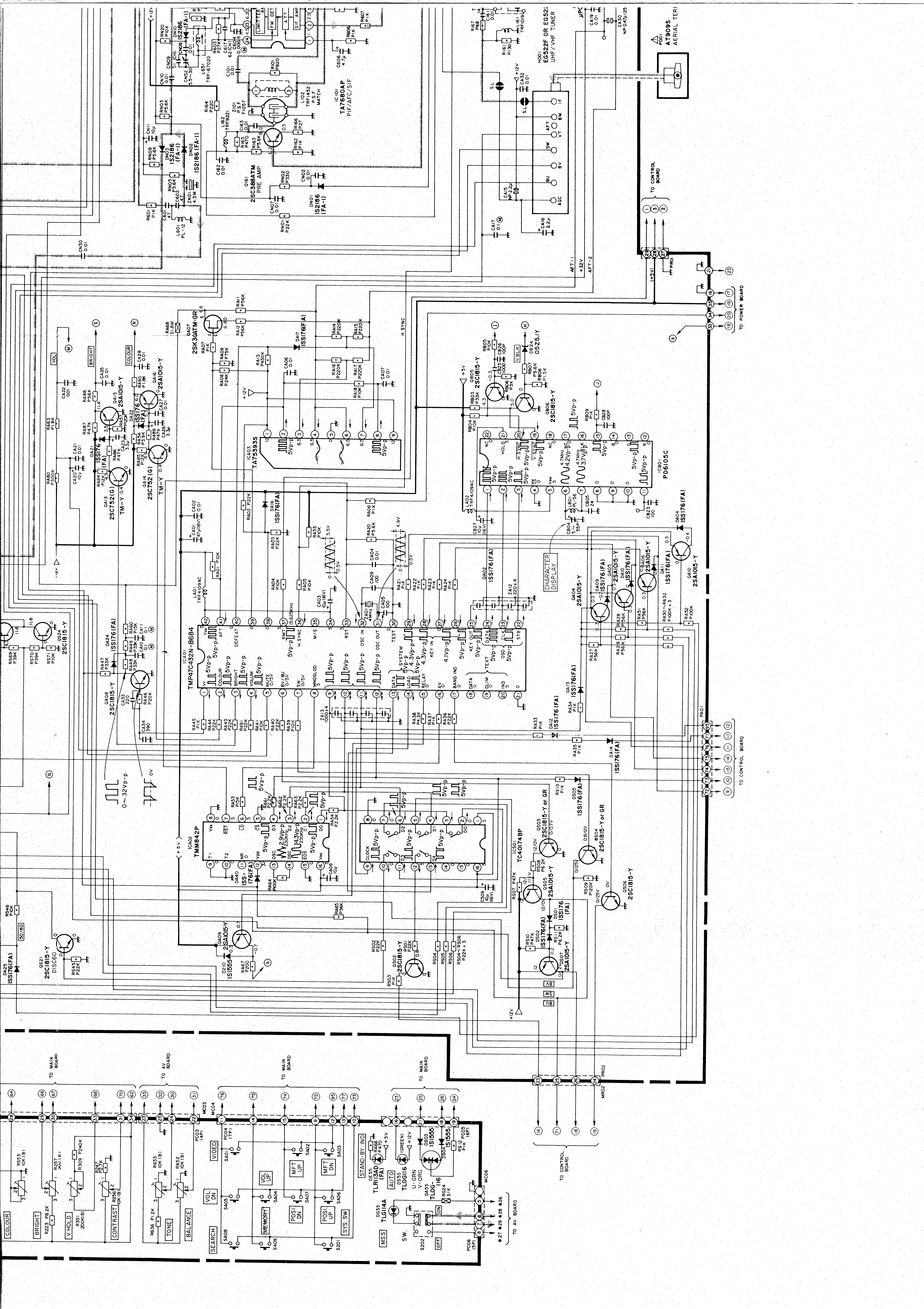
| Type | Mark |
|---|---|
| Carbon Composition | S |
| Oxide Metal Film | R |
| Insulated Carbon Film | P |
| Wire Wound | W |
| Cement | No Mark |
| Variable Resistor | -[/]- |
| Positive Thermistor | -[/]- |
| Negative Thermistor | -[/]- |
| Fusible Resistor | FR |

Ta

| Watt | Mark |
|---|---|
| 1/16 W | -[••]- |
| 1/8 W<br>1/6 W | -[•]- |
| 1/4 W | -[⊠]- |
| 1/2 W | -[/]- |
| 1 W | -[1]- |
| 2 W | -[2]- |



UA01 CONTROL BOARD
PW4624-1
1.5Vp-p
37.9KHz
ICR01
μPC1474HA
PC01 (3P)
PC02 (9P)
MC02
TO MAIN BOARD
TINT
COLOUR
BRIGHT
V.HOLD
CONTRAST
R556 10K(B)
R555 10K(B)
R257
R351 200K(B)
R309 P240K
R247 P2.7K
R256 10K(B)
R223 P8.2K
DR01 TPS703(FA)
RR03 P2.2K
RR04 R47
CR06 100μ(16V)
CR07 0.0022
TO SYS. SW. BOARD
TO A/V BOARD
VTR 3.58
DISK 50
3.58 M
12V
DEF
CXC
P/N
PSSV-1
PAL
NTSC
PAL K.I.L.
V.SYN
H.PUL
SW
Mute
VIDEO OUT
AUDIO OUT
U902 MAIN
+12V
DA25 ISS176(FA)
R546 P10K
50/60
QS21 2SC1815-Y DISC60
RS45 P22K
DS12 ISS176(FA)
RS26 P10K
CS08 0.01
QS14 2SC1815-Y
QS23 2SA1015-Y
(PSSV)
RS68 P5.6K
RS69 P39K
RS70 P39K
RS71 P10K
QS24 2SC1815-Y
RS27 P10K
R661 R120
D681 05Z8.2Y
C671 0.01
C685 100μ(16V)
Q671 2SC1815-Y
Q672 2SC1815-Y
Q673 2SC1959-Y
Q674 2SC1815-Y
Q675 2SC1815-Y
L671 PL-10
L672 TRF3030
Z671 5.5M
Z673 6.5M
Z674 6.0M
Z675 5.5M
Q205 2SA1015-Y
R205 R330
QN06 2SA1015-
QA08 2SC1815-Y
DA24 ISS176(FA)
QA13 2SC752(G) TM-Y
DA21 ISS176 (FA)
QA15 2SA1015-Y
RA80 P300K
RA83 P1.8K
VOL
BRIGHT
COLOUR
CN30 0.01
0~32Vp-p


AT909S
AERIAL TERI
EG522F OR EG52
UHF/VHF TUNER
IC101 TA7680AP PIF/AFC/SIF
Q161 2SC388ATM PRE AMP
LIMITTER
FM DET
ATT
SIF AMP
P.S.F MATCH
ICA01 TMP47C432N-8684
ICA03 TA75393S
ICB01 PD6105C
ICA02 TMM842P
IC501 TC4017 4BP
QA07 2SK30ATM-GR
CHARACTER DISPLAY
H. SYNC
V. BLK
AFT-1
AFT-2
+32V
(+5V)
TO CONTROL BOARD
TO POWER BOARD
TO MAIN BOARD
TO AV BOARD
VOL
BRIGHT
COLOUR
0~32Vp-p
0V
COLOUR
BRIGHT
V.HOLD
CONTRAST
TONE
BALANCE
VOL DN
VOL UP
MEMORY
MFT UP
MFT DN
POSI DN
POSI UP
SYS.SW
SEARCH
VIDEO
STAND-BY IND
AUTO
MSS
OFF
ON
SW.
BV
SW
BU
50/60

Toschi 290

**RESISTOR**

Table 1

| Type | Mark |
|---|---|
| Carbon Composition | S |
| Oxide Metal Film | R |
| Insulated Carbon Film | P |
| Wire Wound | W |
| Cement | No Mark |
| Variable Resistor | -⧄- |
| Positive Thermistor | -⧄- |
| Negative Thermistor | -⧄- |
| Fusible Resistor | FR |

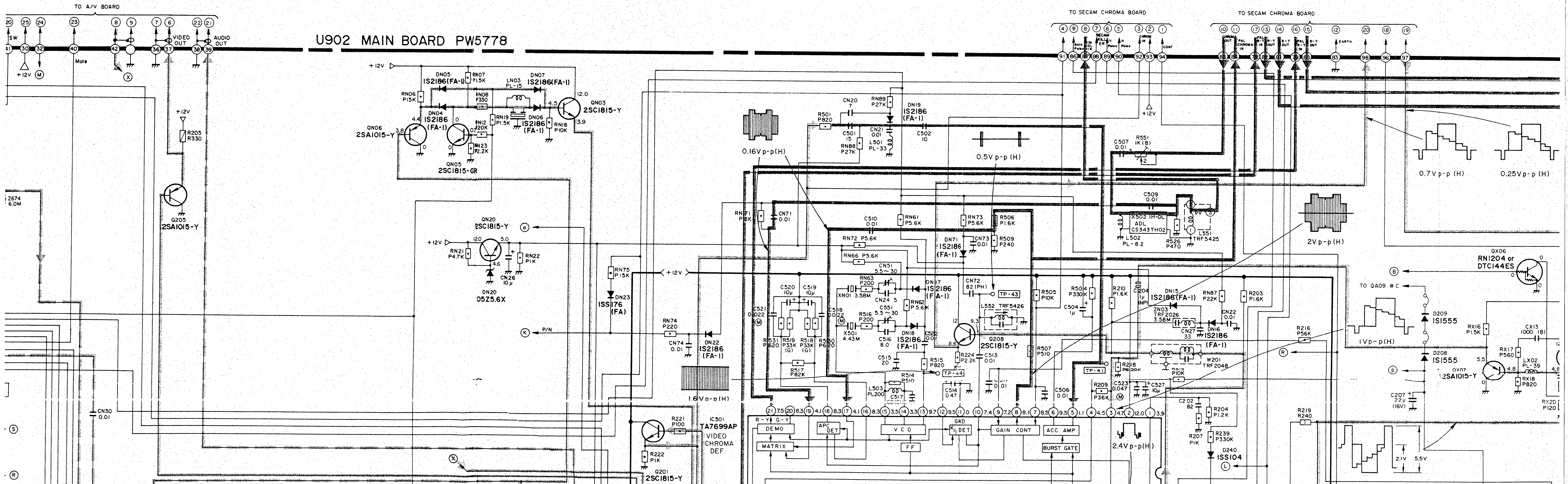
Table 2

| Watt | Mark | Watt | Mark |
|---|---|---|---|
| 1/16 W | -[:]- | 3 W | -[3]- |
| 1/8 W<br>1/6 W | -[·]- | 5 W | -[5]- |
| 1/4 W | -[⊠]- | 10 W | -[10]- |
| 1/2 W | -[/]- | 15 W | -[15]- |
| 1 W | -[1]- | 20 W | -[20]- |
| 2 W | -[2]- | 25 W | -[25]- |

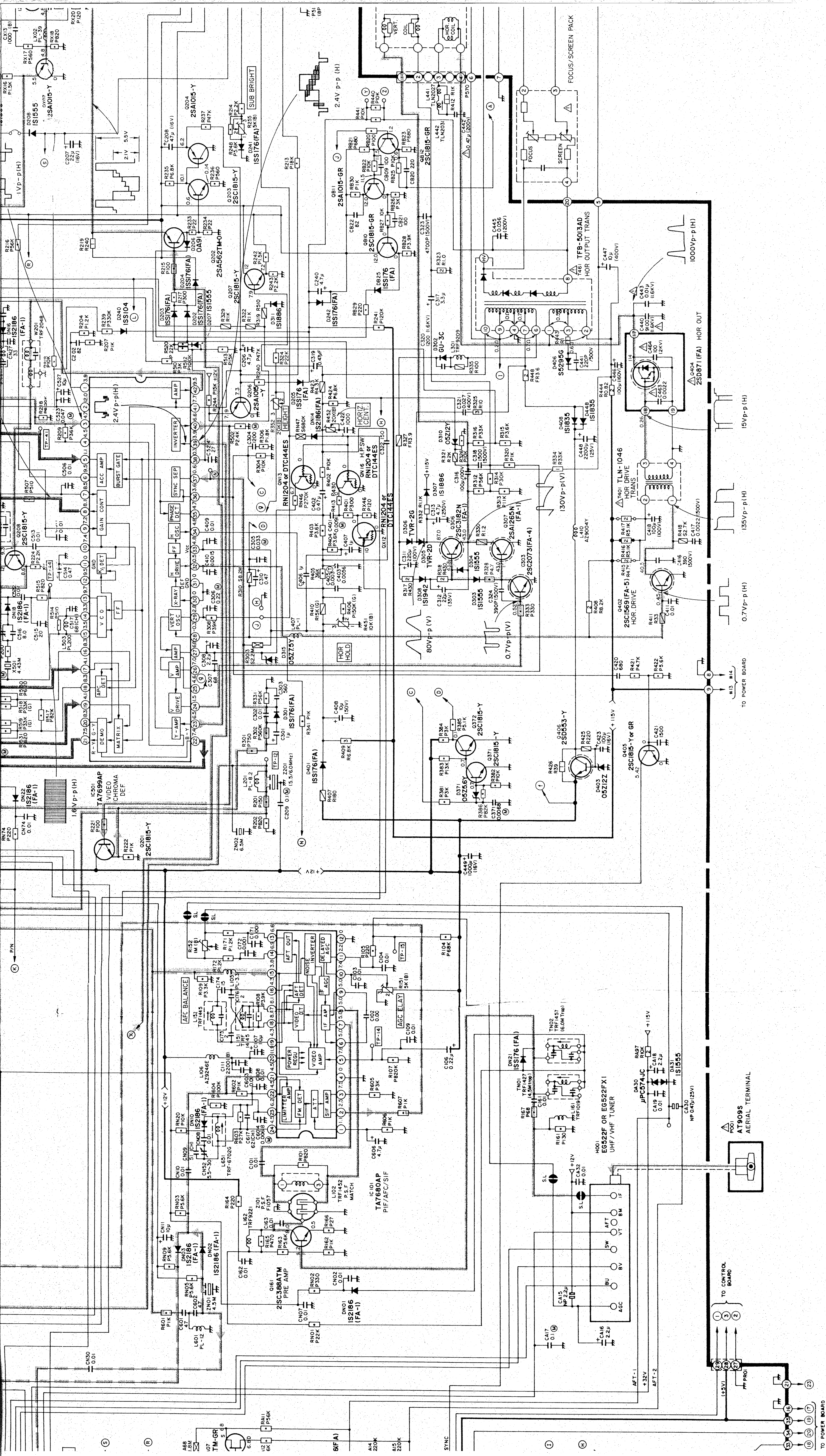
**CAPACITOR**

Table 3

| Type | Mark |
|---|---|
| Ceramic Disc 50V Only | ⊣⊢ |
| Electrolitic | ⊣⊢ |
| Electrolitic Non-Polar | ⊣⊢ |
| Variable Capacitor | ⊣⊢ |
| Other | ⊣⊢ |



U902 MAIN BOARD PW5778
TO A/V BOARD
VIDEO OUT
AUDIO OUT
Mute
TO SECAM CHROMA BOARD
TO SECAM CHROMA BOARD
EARTH
+12V
Q205 2SA1015-Y
R205 R330
QN06 2SA1015-Y
QN05 2SC1815-GR
QN03 2SC1815-Y
DN05 1S2186(FA-1)
DN07 1S2186(FA-1)
DN04 1S2186 (FA-1)
DN06 1S2186 (FA-1)
LN03 PL-15
QN20 2SC1815-Y
DN20 05Z5.6X
DN23 ISS176 (FA)
DN22 1S2186 (FA-1)
IC501 TA7699AP VIDEO CHROMA DEF
Q201 2SC1815-Y
Q208 2SC1815-Y
DN19 1S2186 (FA-1)
DN71 1S2186 (FA-1)
DN17 1S2186 (FA-1)
DN18 1S2186 (FA-1)
DN15 1S2186(FA-1)
DN16 1S2186 (FA-1)
X501 4.43M
XN01 3.58M
X502 1H-DL ADL CS343TH02
L551 TRF5425
L552 TRF5426
W201 TRF2048
ZN03 TRF2026 3.58M
QX06 RN1204 or DTC144ES
QX07 2SA1015-Y
D209 1S1555
D208 1S1555
D240 ISS104
TO QA09 # C
0.16Vp-p(H)
0.5V p-p (H)
0.7Vp-p (H)
0.25Vp-p (H)
2Vp-p(H)
1Vp-p(H)
1.6Vp-p(H)
2.4Vp-p(H)
R-Y G-Y DEMO
MATRIX
APC DET
VCO
FF
K/2 DET
GAIN CONT
ACC AMP
BURST GATE
TP-43
TP-44
TP-41
P/N

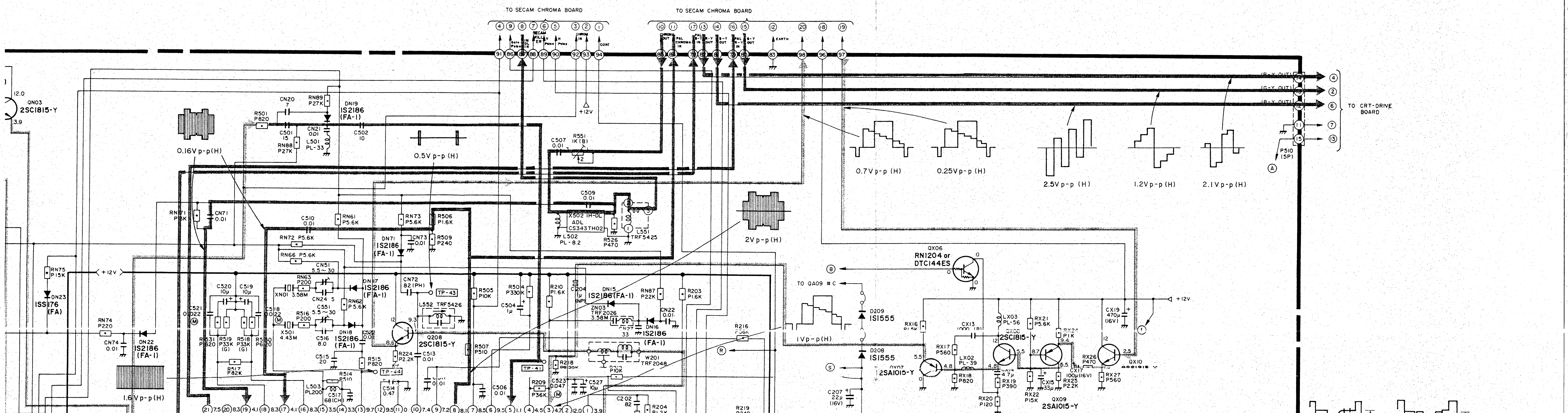

FOCUS/SCREEN PACK
FOCUS
SCREEN
VERT. COIL
HOR COIL
SUB BRIGHT
TFB-5013AD HOR OUTPUT TRANS
1000Vp-p(H)
Q404 2SD871(FA) HOR OUT
T401 TLN-1046 HOR DRIVE TRANS
Q402 2SC1569(FA-5) HOR DRIVE
15Vp-p(H)
135Vp-p(H)
0.7Vp-p(H)
130Vp-p(V)
80Vp-p(V)
0.7Vp-p(V)
2.4V p-p(H)
1Vp-p(H)
1.6Vp-p(H)
TO POWER BOARD
TO CONTROL BOARD
IC501 TA7699AP VIDEO CHROMA DEF
IC101 TA7680AP PIF/AFC/SIF
Q161 2SC388ATM PRE AMP
H001 EG522F OR EG522FX1 UHF/VHF TUNER
P001 AT909S AERIAL TERMINAL
HORIZ CENT.
HEIGHT
HOR HOLD
AFC BALANCE
AGC ELAY
Q303 2SC2073(FA-4)
Q307 2SA1265N (FA-1)
Q306 2SC3182N
Q405 2SC1815-Y or GR
Q406 2SD553-Y
Q201 2SC1815-Y
Q202 2SA562TM-O
Q203 2SC1815-Y
Q204 2SA1015-Y
Q207 2SC1815-Y
Q810 2SC1815-GR
Q811 2SA1015-GR
Q812 2SC1815-GR
Q372 2SC1815-Y
Q371 2SC1815-Y
QN13 RN1204 or DTC144ES
QN16 RN1204 or DTC144ES
QX12 RN1204 or DTC144ES
+12V
+115V
+32V
(+5V)
AFT-1
AFT-2
SYNC

Toschi 290

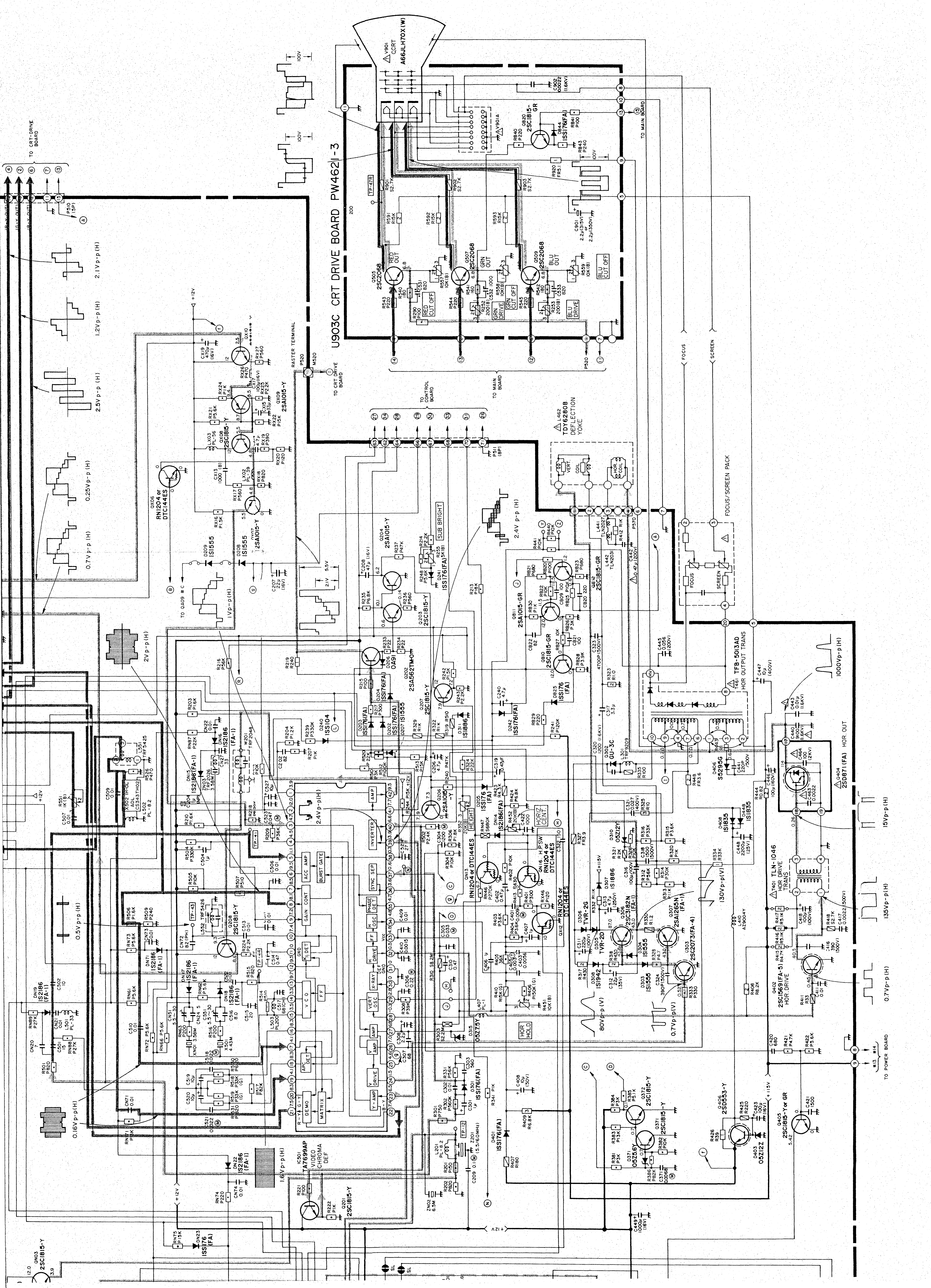
'OR

Table 3

| Type | Mark |
|---|---|
| )isc 50V Only | ⊣⊢ |
| :trolitic | ⊣⊢<br>⊣⊢ |
| :trolitic<br>›n-Polar | ⊣⊢<br>⊣⊢ |
| e Capacitor | ⊣⊢ |
| )ther | ⊣⊢ |



TO SECAM CHROMA BOARD
TO SECAM CHROMA BOARD
TO CRT-DRIVE BOARD
(R-Y OUT)
(G-Y OUT)
(B-Y OUT)
P510 (5P)
CHROMA IN
CONT
SECAM KILLER
EARTH
CHROMA OUT
PAL CHROMA IN
B-Y OUT
R-Y OUT
+12V
QN03 2SC1815-Y
12.0
3.9
0.16Vp-p(H)
0.5Vp-p(H)
0.7Vp-p(H)
0.25Vp-p(H)
2.5Vp-p(H)
1.2Vp-p(H)
2.1Vp-p(H)
2Vp-p(H)
1Vp-p(H)
1.6Vp-p(H)
R501 P820
CN20 7
RN89 P27K
DN19 1S2186 (FA-1)
C502 10
C501 15
CN21 0.01
L501 PL-33
RN88 P27K
C507 0.01
R551 1K(B)
C509 0.01
X502 1H-DL ADL CS343TH02
L502 PL-8.2
R526 P470
L551 TRF5425
RN71 P13K
CN71 0.01
C510 0.01
RN61 P5.6K
RN73 P5.6K
R506 P1.6K
R509 P240
RN72 P5.6K
RN66 P5.6K
DN71 1S2186 (FA-1)
CN73 0.01
RN75 P15K
DN23 1SS176 (FA)
RN74 P220
CN74 0.01
DN22 1S2186 (FA-1)
C520 10μ
C519 10μ
C521 0.022
R531 P820
R519 P33K (G)
R518 P33K (G)
R530 P620
R517 P82K
XN01 3.58M
RN63 P200
CN51 5.5~30
CN24 5
C551 5.5~30
C518 22
X501 4.43M
R516 P200
C516 8.0
DN17 1S2186 (FA-1)
RN62 P5.6K
DN18 1S2186 (FA-1)
C515 20
R514 P510
L503 PL200
C517 68(CH)
R515 P820
C514 0.47
CN72 82(PH)
TP-43
L552 TRF5426
Q208 2SC1815-Y
R224 P2.2K
C513 0.01
TP-44
R505 P10K
R504 P330K
C504 1μ
R507 P510
C506 0.01
R210 P1.6K
C204 1μ
TP-41
R218
R209 P36K
C523 0.047
C527 10μ
DN15 1S2186(FA-1)
ZN03 TRF2026 3.58M
CN23 33
DN16 1S2186
RN87 P22K
CN22 0.01
R203 P1.6K
(FA-1)
W201 TRF2048
P10K
C202 82
R204
R216
R219
QX06 RN1204 or DTC144ES
TO QA09 # C
D209 1S1555
D208 1S1555
C207 22μ (16V)
RX16
QX07 2SA1015-Y
RX17 P560
LX02 PL-39
RX18 P820
CX13 1000
LX03 PL-56
QX08 2SC1815-Y
RX21 P5.6K
RX19 P390
RX20 P120
RX22 P15K
CX14 4.7μ
CX15 33μ
RX24 P1K
RX25 P22K
CX17 100μ(16V)
QX09 2SA1015-Y
RX26 P470
RX27 P560
CX19 470μ (16V)
QX10
+12V
A
B
C
M
R
S


U903C CRT DRIVE BOARD PW4621-3
V901 CRT A66JLH70X(W)
V901A
TO CRT-DRIVE BOARD
TO MAIN BOARD
TO CONTROL BOARD
TO POWER BOARD
RASTER TERMINAL
L462 TDY6280B DEFLECTION YOKE
VERT COIL
HOR COIL
FOCUS/SCREEN PACK
FOCUS
SCREEN
T461 TFB-5013AD HOR OUTPUT TRANS
T401 TLN-1046 HOR DRIVE TRANS
Q404 2SD871(FA) HOR OUT
Q402 2SC1569(FA-5) HOR DRIVE
IC501 TA7699AP VIDEO CHROMA DEF
Q505 2SC2068 RED OUT
Q507 2SC2068 GRN OUT
Q509 2SC2068 BLU OUT
RED CUT OFF
GRN CUT OFF
BLU CUT OFF
GRN DRIVE
BLU DRIVE
SUB BRIGHT
HEIGHT
HOR HOLD
HORIZ CENT.
ACC AMP
BURST GATE
GAIN CONT
DEMO
MATRIX
VCO
APC DET
SYNC SEP
PHASE DET
INVERTER
AMP
Y-AMP
DRIVE
VERT OSC
X-RAY
1000Vp-p(H)
135Vp-p(H)
15Vp-p(H)
0.7Vp-p(H)
130Vp-p(V)
80Vp-p(V)
2.4V p-p(H)
2V p-p(H)
0.5V p-p(H)
0.16V p-p(H)
1.6V p-p(H)
1Vp-p(H)
2.5V p-p (H)
1.2V p-p (H)
2.1V p-p (H)
0.25V p-p (H)
0.7V p-p (H)
100V

# SCHEMATIC DIAGRAM <MODEL 289X4Y> (2/2)

**NOTE:** The parts identified by the international hazard symbols are critical for safety. Replace only with part number specified.

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## OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chassis ground, line voltage 220 volts, colour bar signal.
2. Voltages reading may vary ±20%.
3. The schematic shown is representative only.
4. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
5. Check FINE TUNING, BRIGHTNESS, CONTRAST and COLOUR controls for best picture, make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position.
6. Waveforms are taken using a standard colour bar signal.

NOTES:

1. D.C. resistance value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits are subject to change without notice.
3. ● : Solder links.

## EXPRESSION

### VALUE OF RESISTOR, CAPACITOR and INDUCTOR

1. Resistance is shown in ohm, k=1,000, M=100,000.
2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in mfd and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH, and the values less than 1 in H.

## RESISTOR

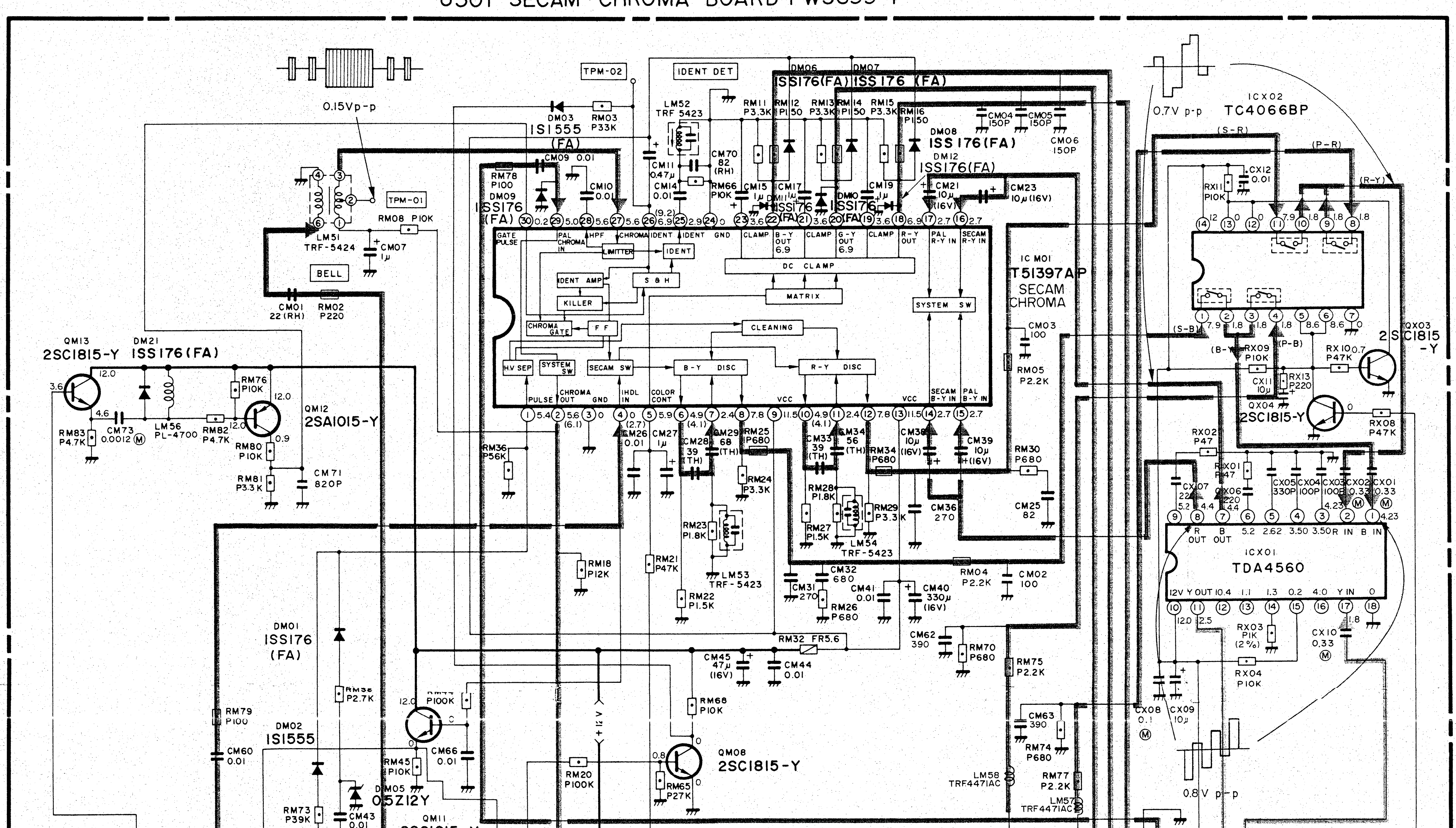
Table 1

| Type | Mark |
|---|---|
| Carbon Composition | S |
| Oxide Metal Film | R |
| Insulated Carbon Film | P |
| Wire Wound | W |
| Cement | No Mark |
| Variable Resistor | [↗] |
| Positive Thermistor | [↗] |
| Negative Thermistor | [⤢] |
| Fusible Resistor | FR |

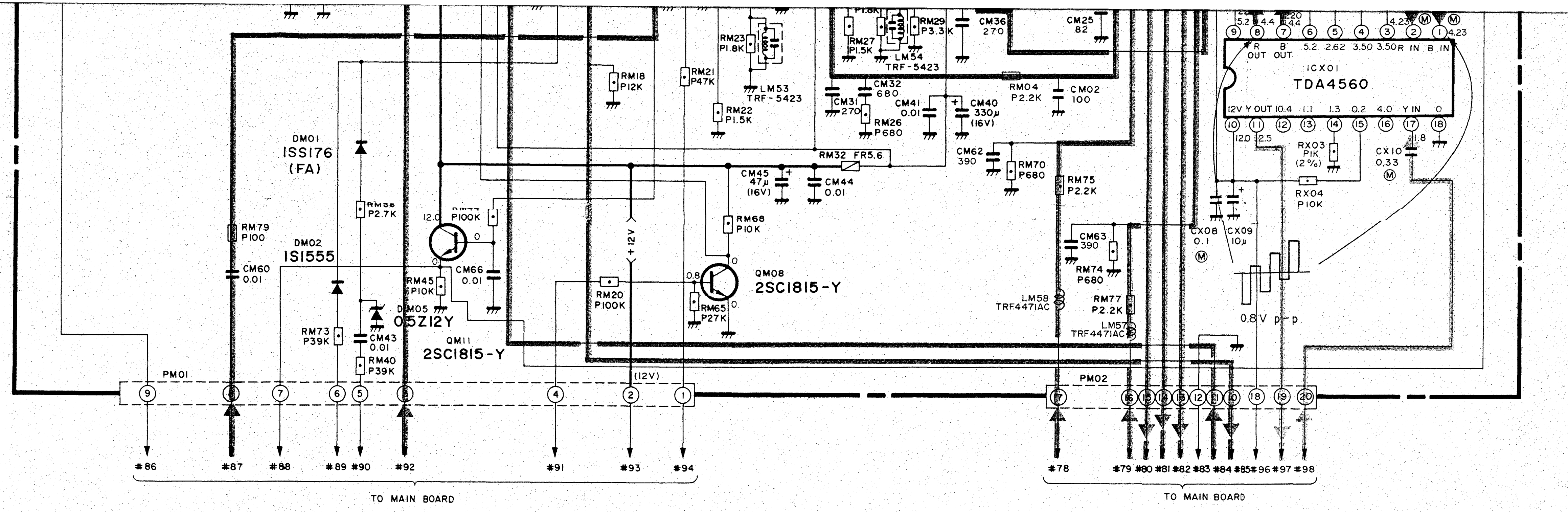
T.

| Watt | Mark |
|---|---|
| 1/16 W | [··] |
| 1/8 W<br>1/6 W | [·] |
| 1/4 W | [☒] |
| 1/2 W | [/] |
| 1 W | [1] |
| 2 W | [2] |

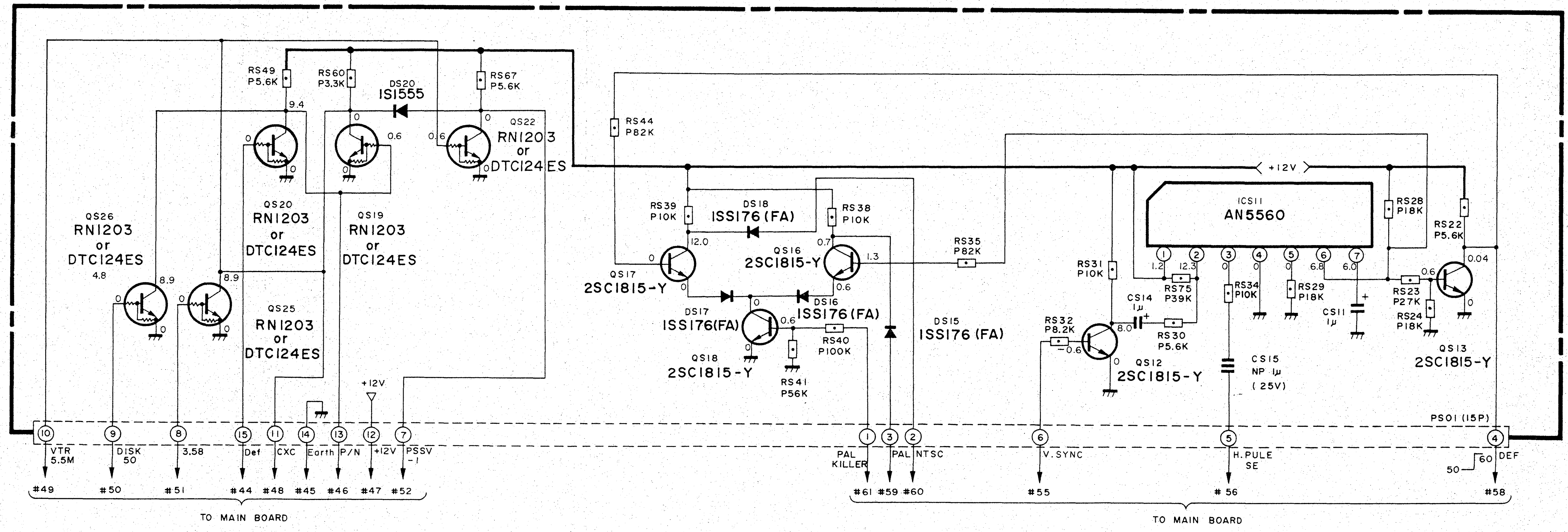
U501 SECAM CHROMA BOARD PW5699-1



0.15Vp-p
TPM-02
IDENT DET
TPM-01
DM03 1S1555 (FA)
RM03 P33K
LM52 TRF 5423
DM06 ISS176(FA)
DM07 ISS176 (FA)
RM11 P3.3K
RM12 P150
RM13 P3.3K
RM14 P150
RM15 P3.3K
RM16 P150
CM04 150P
CM05 150P
CM06 150P
DM08 ISS176(FA)
DM12 ISS176(FA)
CM23 10μ(16V)
CM70 82 (RH)
CM09 0.01
CM10 0.01
CM11 0.47μ
CM14 0.01
RM66 P10K
CM15 1μ
CM17
CM19
CM21 10μ (16V)
RM78 P100
DM09 ISS176 (FA)
RM08 P10K
LM51 TRF-5424
CM07 1μ
BELL
CM01 22 (RH)
RM02 P220
GATE PULSE
PAL CHROMA IN
HPF
CHROMA IDENT
IDENT
GND
CLAMP
B-Y OUT 6.9
G-Y OUT 6.9
R-Y OUT
PAL R-Y IN
SECAM R-Y IN
LIMITTER
IDENT AMP
KILLER
S & H
DC CLAMP
MATRIX
SYSTEM SW
CHROMA GATE
F F
CLEANING
H.V SEP
SYSTEM SW
SECAM SW
B-Y DISC
R-Y DISC
PULSE
CHROMA OUT
IHDL IN
COLOR CONT
VCC
SECAM B-Y IN
PAL B-Y IN
IC M01 T51397AP SECAM CHROMA
CM03 100
RM05 P2.2K
QM13 2SC1815-Y
DM21 ISS176(FA)
RM76 P10K
QM12 2SA1015-Y
RM83 P4.7K
CM73 0.0012 Ⓜ
LM56 PL-4700
RM82 P4.7K
RM80 P10K
RM81 P3.3K
CM71 820P
RM36 P56K
CM26 0.01
CM27 1μ
CM28 39 (TH)
CM29 68 (TH)
RM25 P680
RM24 P3.3K
RM23 P1.8K
RM22 P1.5K
LM53 TRF-5423
CM33 39 (TH)
CM34 56 (TH)
RM34 P680
CM38 10μ (16V)
CM39 10μ (16V)
RM28 P1.8K
RM27 P1.5K
RM29 P3.3K
LM54 TRF-5423
CM36 270
RM30 P680
CM25 82
RM18 P12K
RM21 P47K
CM32 680
CM31 270
CM41 0.01
RM26 P680
CM40 330μ (16V)
RM04 P2.2K
CM02 100
RM32 FR5.6
CM45 47μ (16V)
CM44 0.01
CM62 390
RM70 P680
RM75 P2.2K
DM01 ISS176 (FA)
RM38 P2.7K
RM79 P100
DM02 1S1555
CM60 0.01
RM73 P39K
CM43 0.01
DM05 05Z12Y
RM45 P10K
CM66 0.01
QM11
P100K
+12V
RM68 P10K
RM20 P100K
QM08 2SC1815-Y
RM65 P27K
LM58 TRF447IAC
CM63 390
RM74 P680
RM77 P2.2K
LM57 TRF447IAC
0.7V p-p
ICX02 TC4066BP
(S-R)
(P-R)
(R-Y)
(S-B)
(B-Y)
(P-B)
RX11 P10K
CX12 0.01
RX09 P10K
CX11 10μ
RX13 P220
QX04 2SC1815-Y
RX10 P47K
QX03 2SC1815-Y
RX08 P47K
RX02 P47
RX01 P47
CX07 22
CX06 220
CX05 330P
CX04 100P
CX03 0.33
CX02 0.33
CX01
ICX01 TDA4560
R OUT
B OUT
R IN
B IN
12V
Y OUT
Y IN
RX03 P1K (2%)
CX10 0.33 Ⓜ
RX04 P10K
CX08 0.1 Ⓜ
CX09 10μ
0.8V p-p


ICX01
TDA4560
CX10 0.33
RX03 P1K (2%)
RX04 P10K
CX08 0.1
CX09 10μ
0.8V p-p
CM25 82
CM02 100
RM04 P2.2K
CM36 270
CM40 330μ (16V)
CM41 0.01
CM32 680
CM31 270
RM26 P680
RM27 P1.5K
RM29 P3.3K
LM54 TRF-5423
LM53 TRF-5423
RM23 P1.8K
RM22 P1.5K
RM21 P47K
RM18 P12K
RM32 FR5.6
CM44 0.01
CM45 47μ (16V)
CM62 390
RM70 P680
RM75 P2.2K
CM63 390
RM74 P680
RM77 P2.2K
LM58 TRF447IAC
LM57 TRF447IAC
RM68 P10K
QM08 2SC1815-Y
RM65 P27K
RM20 P100K
+12V
(12V)
CM66 0.01
RM45 P10K
DM05 05Z12Y
QM11 2SC1815-Y
CM43 0.01
RM40 P39K
RM36 P2.7K
RM73 P39K
DM01 ISS176 (FA)
DM02 IS1555
RM79 P100
CM60 0.01
PM01
PM02
#86 #87 #88 #89 #90 #92 #91 #93 #94
#78 #79 #80 #81 #82 #83 #84 #85 #96 #97 #98
TO MAIN BOARD
TO MAIN BOARD

## U501 SYSTEM SW. BOARD PW5699-2


RS49 P5.6K
RS60 P3.3K
DS20 IS1555
RS67 P5.6K
QS22 RN1203 or DTC124ES
QS20 RN1203 or DTC124ES
QS19 RN1203 or DTC124ES
QS25 RN1203 or DTC124ES
QS26 RN1203 or DTC124ES
RS44 P82K
RS39 P10K
DS18 ISS176 (FA)
RS38 P10K
QS17 2SC1815-Y
QS16 2SC1815-Y
DS17 ISS176(FA)
DS16 ISS176 (FA)
QS18 2SC1815-Y
RS40 P100K
RS41 P56K
DS15 ISS176 (FA)
RS35 P82K
+12V
ICS11
AN5560
RS31 P10K
RS32 P8.2K
CS14 1μ
RS75 P39K
RS30 P5.6K
QS12 2SC1815-Y
RS34 P10K
CS15 NP 1μ (25V)
RS29 P18K
CS11 1μ
RS28 P18K
RS22 P5.6K
RS23 P27K
RS24 P18K
QS13 2SC1815-Y
PS01 (15P)
VTR 5.5M
DISK 50
3.58
Def
CXC
Earth
P/N
+12V
PSSV -1
PAL KILLER
PAL
NTSC
V. SYNC
H. PULE SE
DEF
50
60
#49 #50 #51 #44 #48 #45 #46 #47 #52
#61 #59 #60 #55 #56 #58
TO MAIN BOARD
TO MAIN BOARD

NOTES:

1. D.C. resistance value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits are subject to change without notice.
3. ⊖ : Solder links.

## EXPRESSION

### VALUE OF RESISTOR, CAPACITOR and INDUCTOR

1. Resistance is shown in ohm, k=1,000, M=100,000.
2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in mfd and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in $\mu$H, and the values less than 1 in H.

### RESISTOR

Table 1

| Type | Mark |
|---|---|
| Carbon Composition | S |
| Oxide Metal Film | R |
| Insulated Carbon Film | P |
| Wire Wound | W |
| Cement | No Mark |
| Variable Resistor | ⧄ |
| Positive Thermistor | ⧄ |
| Negative Thermistor | ⧅ |
| Fusible Resistor | FR |

Table 2

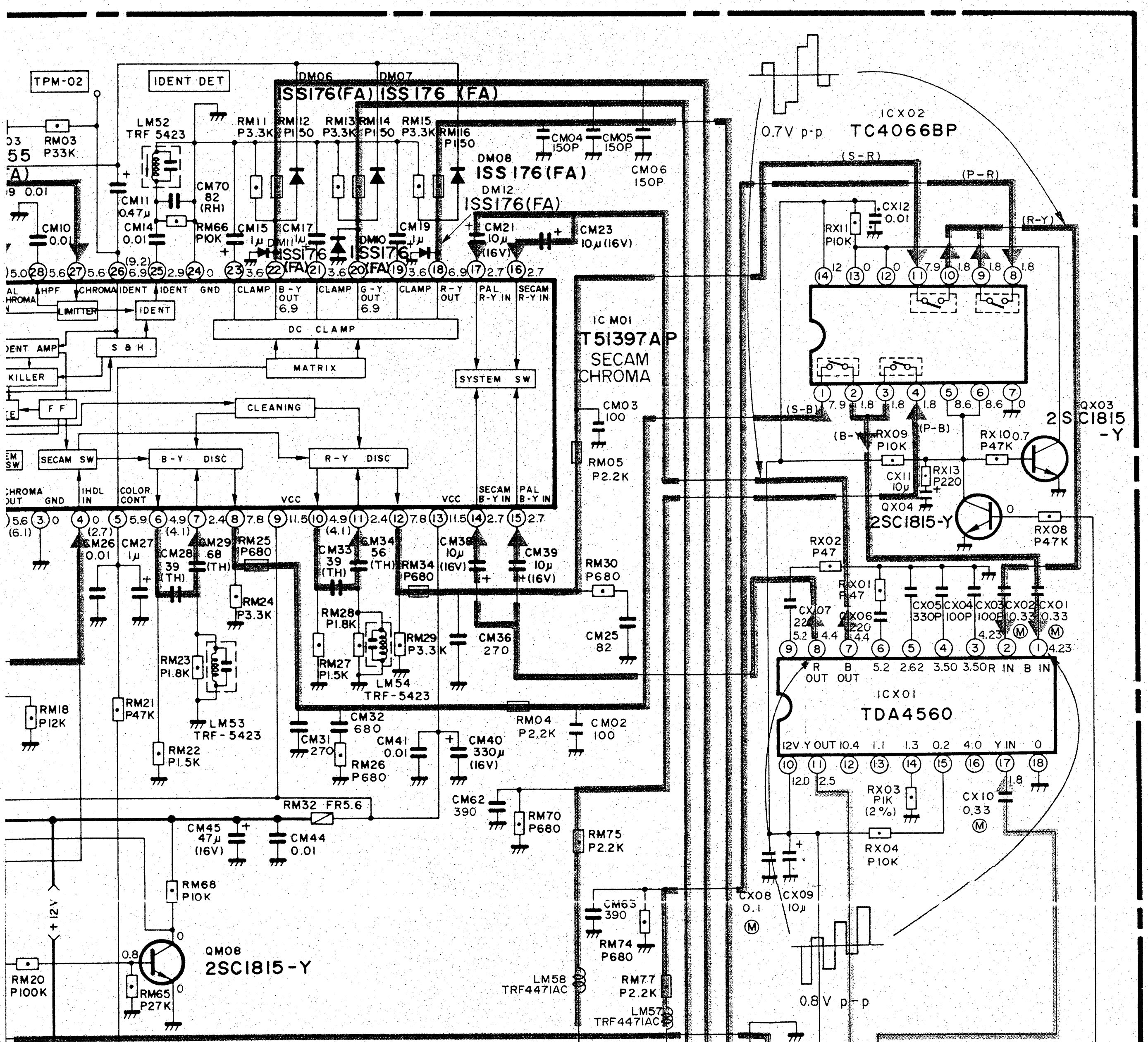
| Watt | Mark | Watt | Mark |
|---|---|---|---|
| 1/16 W | ⊡ | 3 W | 3 |
| 1/8 W<br>1/6 W | ⊡ | 5 W | 5 |
| 1/4 W | ⊠ | 10 W | 10 |
| 1/2 W | ⧄ | 15 W | 15 |
| 1 W | 1 | 20 W | 20 |
| 2 W | 2 | 25 W | 25 |

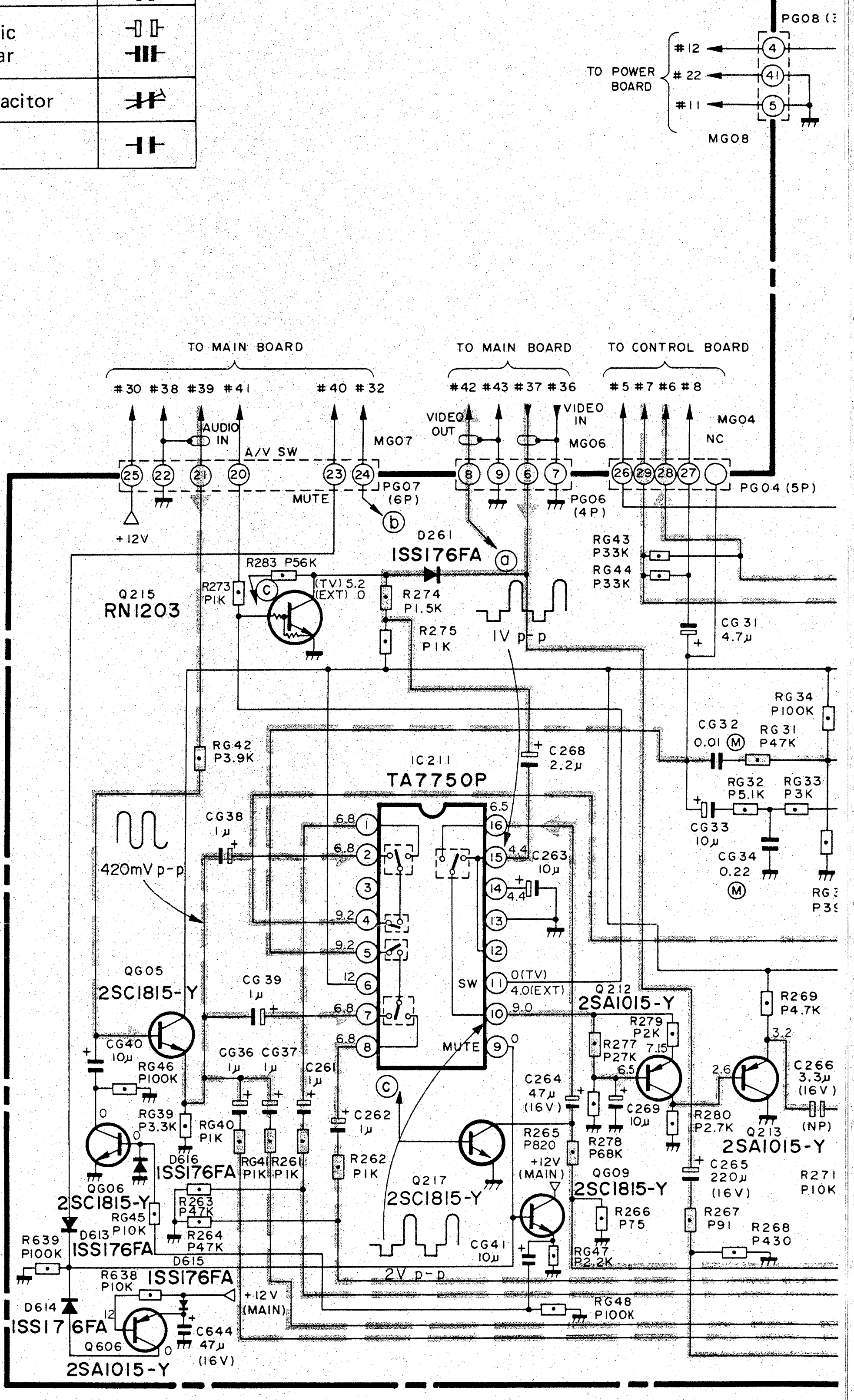
### CAPACITOR

Table 3

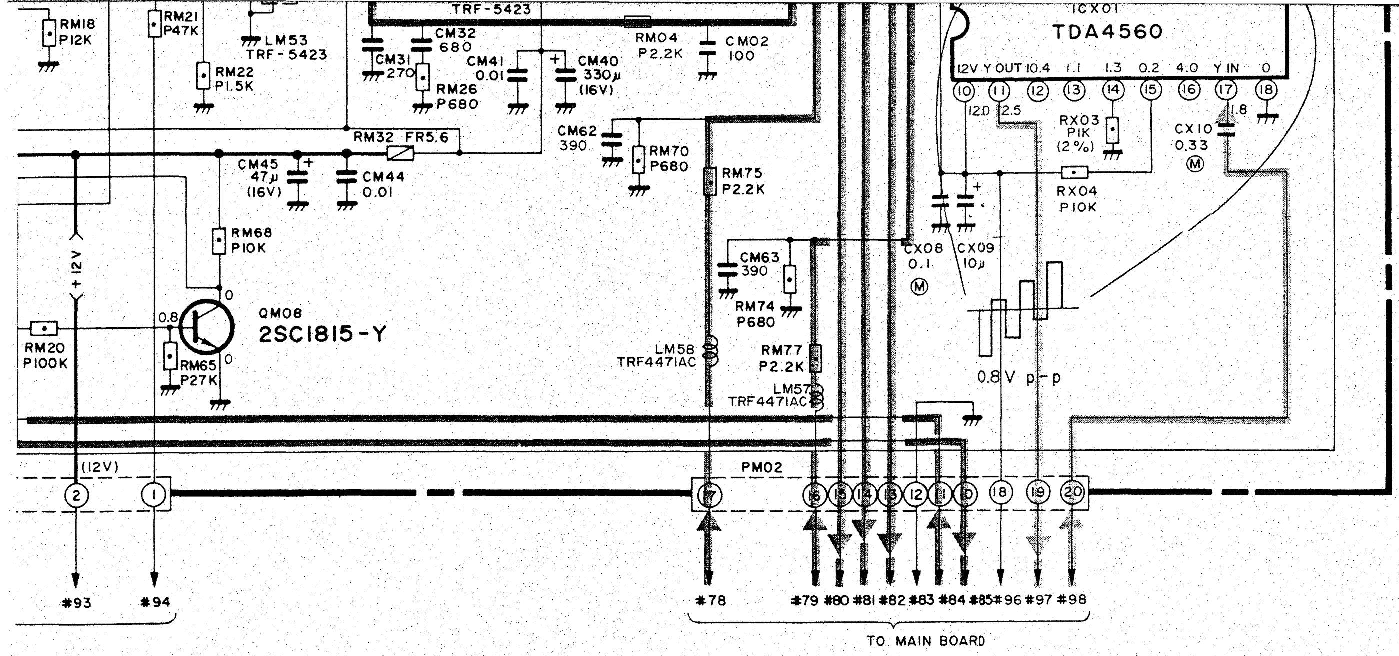
| Type | Mark |
|---|---|
| Ceramic Disc 50V Only | ⊣⊢ |
| Electrolitic | ⊣⊢ |
| Electrolitic<br>Non-Polar | ⊣⊢ |
| Variable Capacitor | ⊣⊢ |
| Other | ⊣⊢ |

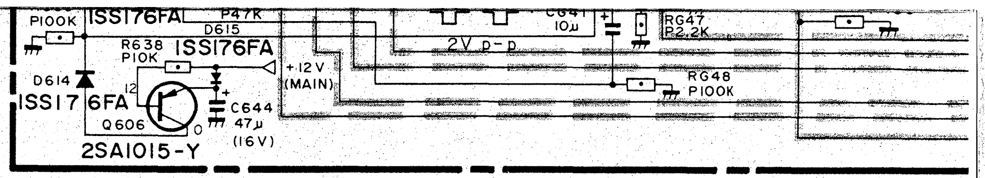
M CHROMA BOARD PW5699-1


TPM-02
IDENT DET
LM52 TRF 5423
RM03 P33K
DM06 ISS176(FA)
DM07 ISS176(FA)
RM11 P3.3K
RM12 P150
RM13 P3.3K
RM14 P150
RM15 P3.3K
RM16 P150
CM04 150P
CM05 150P
CM06 150P
DM08 ISS176(FA)
DM12 ISS176(FA)
CM70 82 (RH)
CM11 0.47μ
CM14 0.01
CM10 0.01
RM66 P10K
CM15 1μ
CM17
CM19
CM21 10μ (16V)
CM23 10μ (16V)
IC M01 T51397AP SECAM CHROMA
CHROMA
IDENT
LIMITTER
IDENT AMP
KILLER
S & H
DC CLAMP
MATRIX
CLEANING
SECAM SW
B-Y DISC
R-Y DISC
SYSTEM SW
CLAMP
B-Y OUT 6.9
G-Y OUT 6.9
R-Y OUT
PAL R-Y IN
SECAM R-Y IN
CHROMA OUT
GND
IHDL IN
COLOR CONT
VCC
SECAM B-Y IN
PAL B-Y IN
CM03 100
RM05 P2.2K
CM26 0.01
CM27 1μ
CM28 68
CM29 39 (TH)
RM25 P680
RM24 P3.3K
RM23 P1.8K
RM21 P47K
RM22 P1.5K
LM53 TRF-5423
CM33 39 (TH)
CM34 56 (TH)
RM34 P680
RM28 P1.8K
RM27 P1.5K
RM29 P3.3K
LM54 TRF-5423
CM38 10μ (16V)
CM39 10μ (16V)
CM36 270
RM30 P680
CM25 82
CM31 270
CM32 680
CM41 0.01
CM40 330μ (16V)
RM26 P680
RM04 P2.2K
CM02 100
RM18 P12K
RM32 FR5.6
CM45 47μ (16V)
CM44 0.01
CM62 390
RM70 P680
RM75 P2.2K
CM63 390
RM74 P680
RM77 P2.2K
LM58 TRF447IAC
LM57 TRF447IAC
RM68 P10K
QM08 2SC1815-Y
RM65 P27K
RM20 P100K
+12V
0.7V p-p
ICX02 TC4066BP
(S-R)
(P-R)
(R-Y)
(S-B)
(B-Y)
(P-B)
CX12 0.01
RX11 P10K
RX09 P10K
CX11 10μ
RX13 P220
RX10 P47K
QX03 2SC1815-Y
QX04 2SC1815-Y
RX08 P47K
RX02 P47
RX01 P47
CX07 22μ
CX06 220
CX05 330P
CX04 100P
CX03 100P
CX02 0.33
CX01 0.33
ICX01 TDA4560
R OUT
B OUT
R IN
B IN
12V
Y OUT
Y IN
RX03 P1K (2%)
RX04 P10K
CX10 0.33
CX08 0.1
CX09 10μ
0.8V p-p

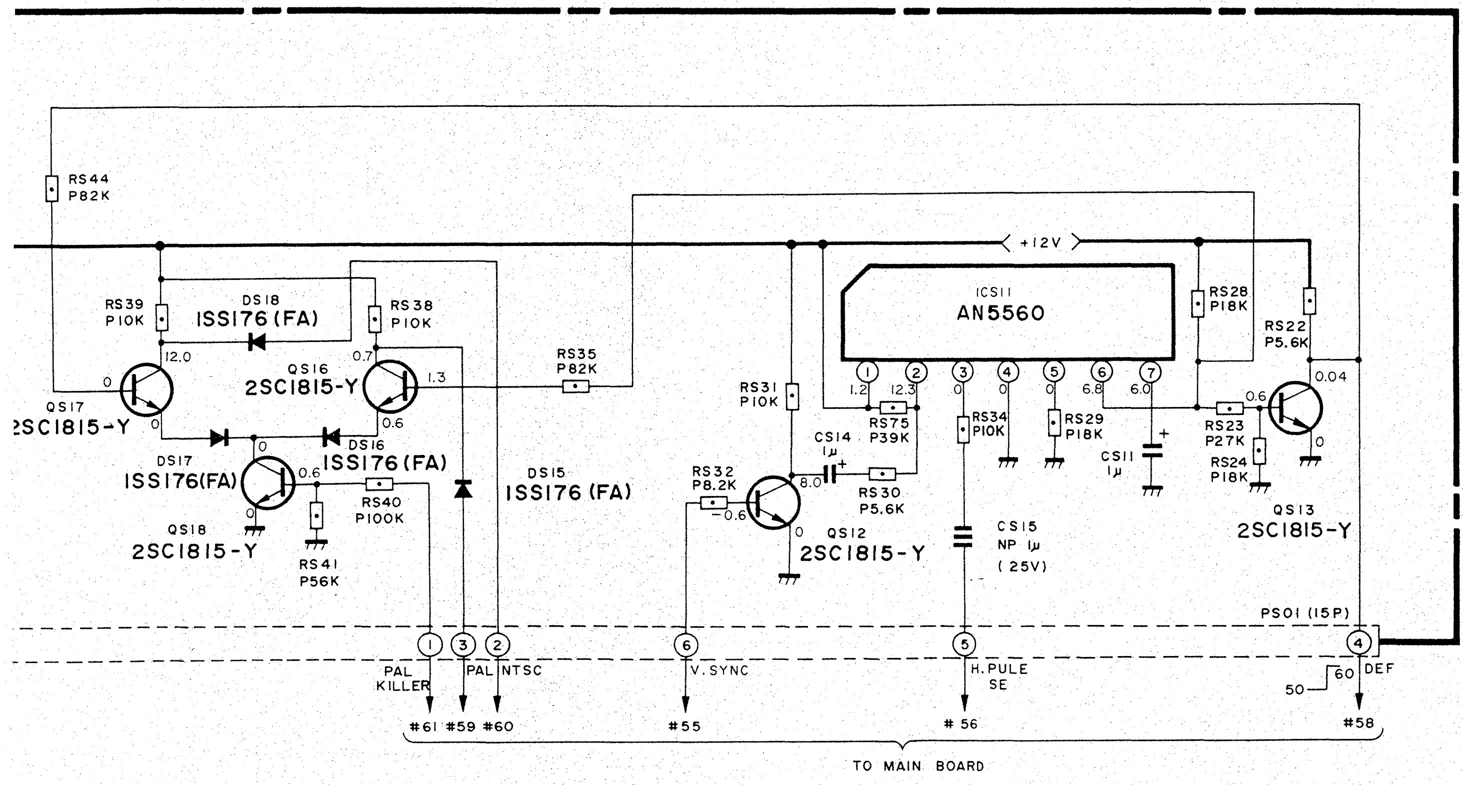

PG08
#12
#22
#11
TO POWER BOARD
MG08
TO MAIN BOARD
#30 #38 #39 #41
#40 #32
TO MAIN BOARD
#42 #43 #37 #36
TO CONTROL BOARD
#5 #7 #6 #8
AUDIO IN
A/V SW
MUTE
VIDEO OUT
VIDEO IN
MG07
MG06
MG04
NC
PG07 (6P)
PG06 (4P)
PG04 (5P)
+12V
D261 ISS176FA
R283 P56K
R273 P1K
(TV) 5.2
(EXT) 0
Q215 RN1203
R274 P1.5K
R275 P1K
1V p-p
RG43 P33K
RG44 P33K
CG31 4.7μ
RG42 P3.9K
C268 2.2μ
IC211 TA7750P
SW
MUTE
CG38 1μ
420mV p-p
CG32 0.01
RG34 P100K
RG31 P47K
RG32 P5.1K
RG33 P3K
CG33 10μ
CG34 0.22
C263 10μ
0(TV)
4.0(EXT)
QG05 2SC1815-Y
CG39 1μ
CG40 10μ
RG46 P100K
CG36 1μ
CG37 1μ
C261 1μ
C262 1μ
RG39 P3.3K
RG40 P1K
RG41 P1K
R261 P1K
R262 P1K
D616 ISS176FA
QG06 2SC1815-Y
RG45 P10K
R263 P47K
R264 P47K
D613 ISS176FA
R639 P100K
D615
R638 P10K
ISS176FA
D614 ISS176FA
Q606 2SA1015-Y
C644 47μ (16V)
+12V (MAIN)
Q217 2SC1815-Y
2V p-p
CG41 10μ
C264 47μ (16V)
R265 P820
+12V (MAIN)
Q212 2SA1015-Y
R279 P2K
R277 P27K
R278 P68K
C269 10μ
QG09 2SC1815-Y
R266 P75
RG47 P2.2K
RG48 P100K
R269 P4.7K
R280 P2.7K
Q213 2SA1015-Y
C266 3.3μ (16V) (NP)
C265 220μ (16V)
R267 P91
R268 P430
R271 P10K

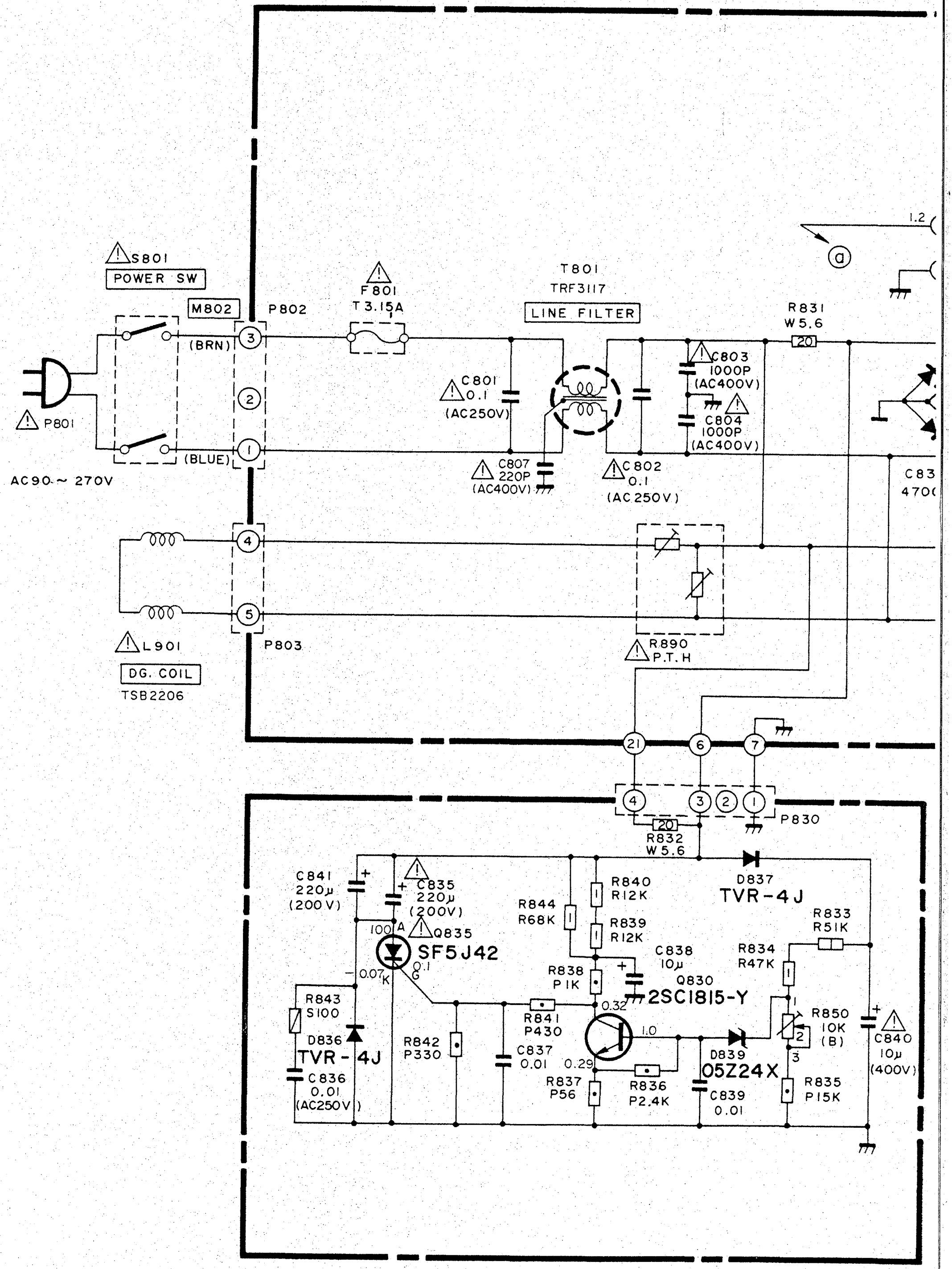
U903 A/V SOUND BOARD PW4621-2


ICX01
TDA4560
12V Y OUT 10.4 1.1 1.3 0.2 4.0 Y IN 0
RX03 P1K (2%)
RX04 P10K
CX10 0.33
CX08 0.1
CX09 10μ
0.8V p-p
CM63 390
RM74 P680
RM77 P2.2K
LM57 TRF4471AC
LM58 TRF4471AC
RM75 P2.2K
RM70 P680
CM62 390
CM40 330μ (16V)
CM41 0.01
RM04 P2.2K
CM02 100
CM32 680
CM31 270
RM26 P680
TRF-5423
LM53 TRF-5423
RM22 P1.5K
RM21 P47K
RM18 P12K
RM32 FR5.6
CM45 47μ (16V)
CM44 0.01
RM68 P10K
QM08 2SC1815-Y
RM65 P27K
RM20 P100K
+12V
(12V)
PM02
#93
#94
#78
#79 #80 #81 #82 #83 #84 #85 #96 #97 #98
TO MAIN BOARD


P100K
ISS176FA
P47K
D615
R638 P10K
ISS176FA
D614
ISS176FA
Q606
2SA1015-Y
+12V (MAIN)
C644 47μ (16V)
2V p-p
C641 10μ
RG47 P2.2K
RG48 P100K

U903 A/V SOUND BOARD PW4621-2


RS44 P82K
RS39 P10K
DS18 ISS176(FA)
RS38 P10K
QS16 2SC1815-Y
QS17 2SC1815-Y
DS17 ISS176(FA)
DS16 ISS176(FA)
QS18 2SC1815-Y
RS40 P100K
RS41 P56K
DS15 ISS176(FA)
RS35 P82K
+12V
ICS11
AN5560
RS31 P10K
RS32 P8.2K
CS14 1μ
RS75 P39K
RS30 P5.6K
QS12 2SC1815-Y
RS34 P10K
RS29 P18K
CS11 1μ
CS15 NP 1μ (25V)
RS28 P18K
RS22 P5.6K
RS23 P27K
RS24 P18K
QS13 2SC1815-Y
PS01 (15P)
PAL KILLER
PAL
NTSC
V.SYNC
H.PULSE
DEF
#61 #59 #60
#55
#56
#58
TO MAIN BOARD

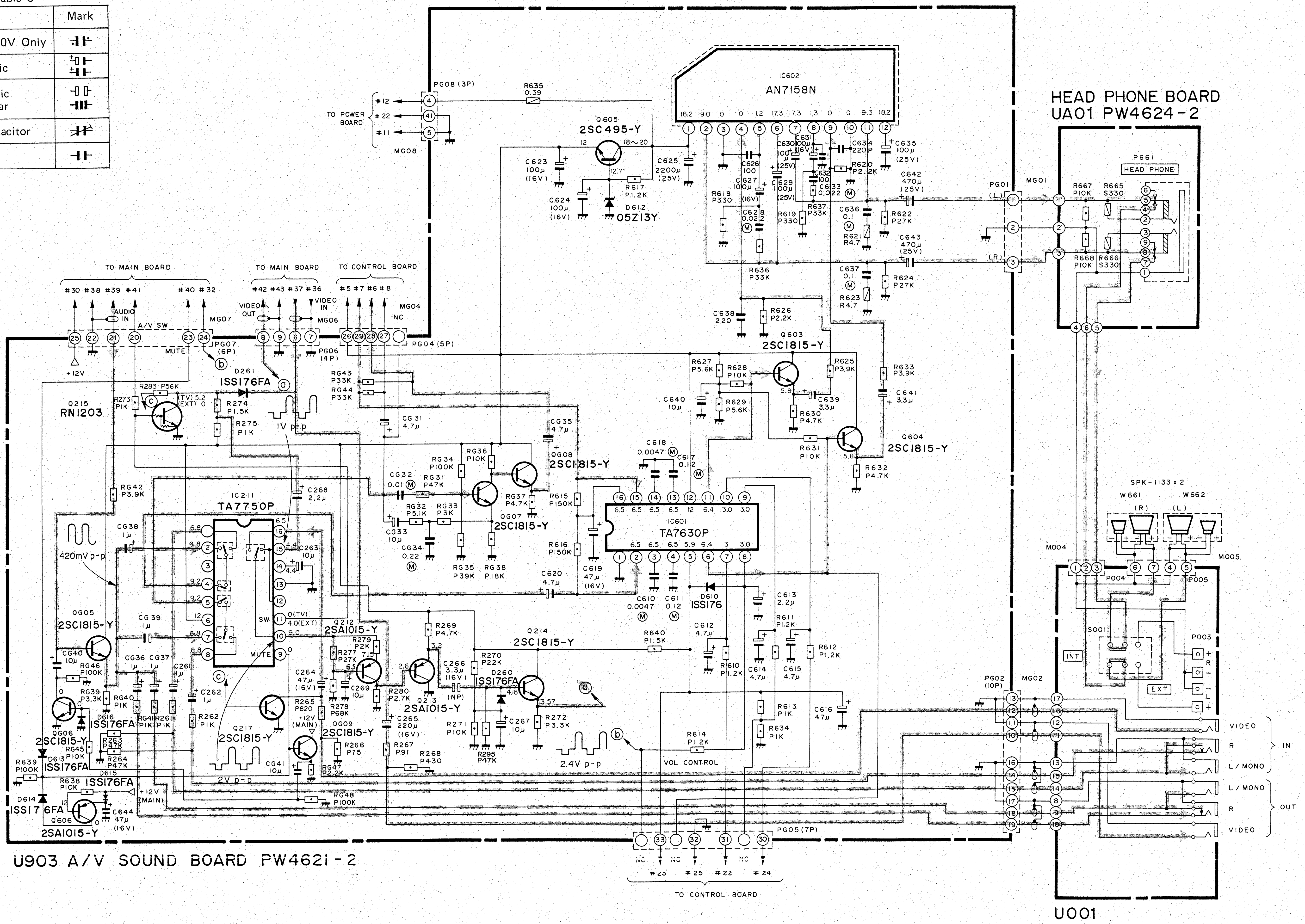

S801
POWER SW
M802
(BRN)
(BLUE)
P801
AC90~270V
P802
F801
T3.15A
T801
TRF3117
LINE FILTER
C801 0.1 (AC250V)
C807 220P (AC400V)
C802 0.1 (AC250V)
C803 1000P (AC400V)
C804 1000P (AC400V)
R831 W5.6
C83 470
L901
DG. COIL
TSB2206
P803
R890 P.T.H
P830
R832 W5.6
C841 220μ (200V)
C835 220μ (200V)
Q835
SF5J42
R843 S100
D836
TVR-4J
C836 0.01 (AC250V)
R844 R68K
R842 P330
R840 R12K
R839 R12K
R838 P1K
R841 P430
C837 0.01
C838 10μ
Q830
2SC1815-Y
R837 P56
R836 P2.4K
D839
05Z24X
C839 0.01
D837
TVR-4J
R833 R51K
R834 R47K
R850 10K (B)
R835 P15K
C840 10μ (400V)

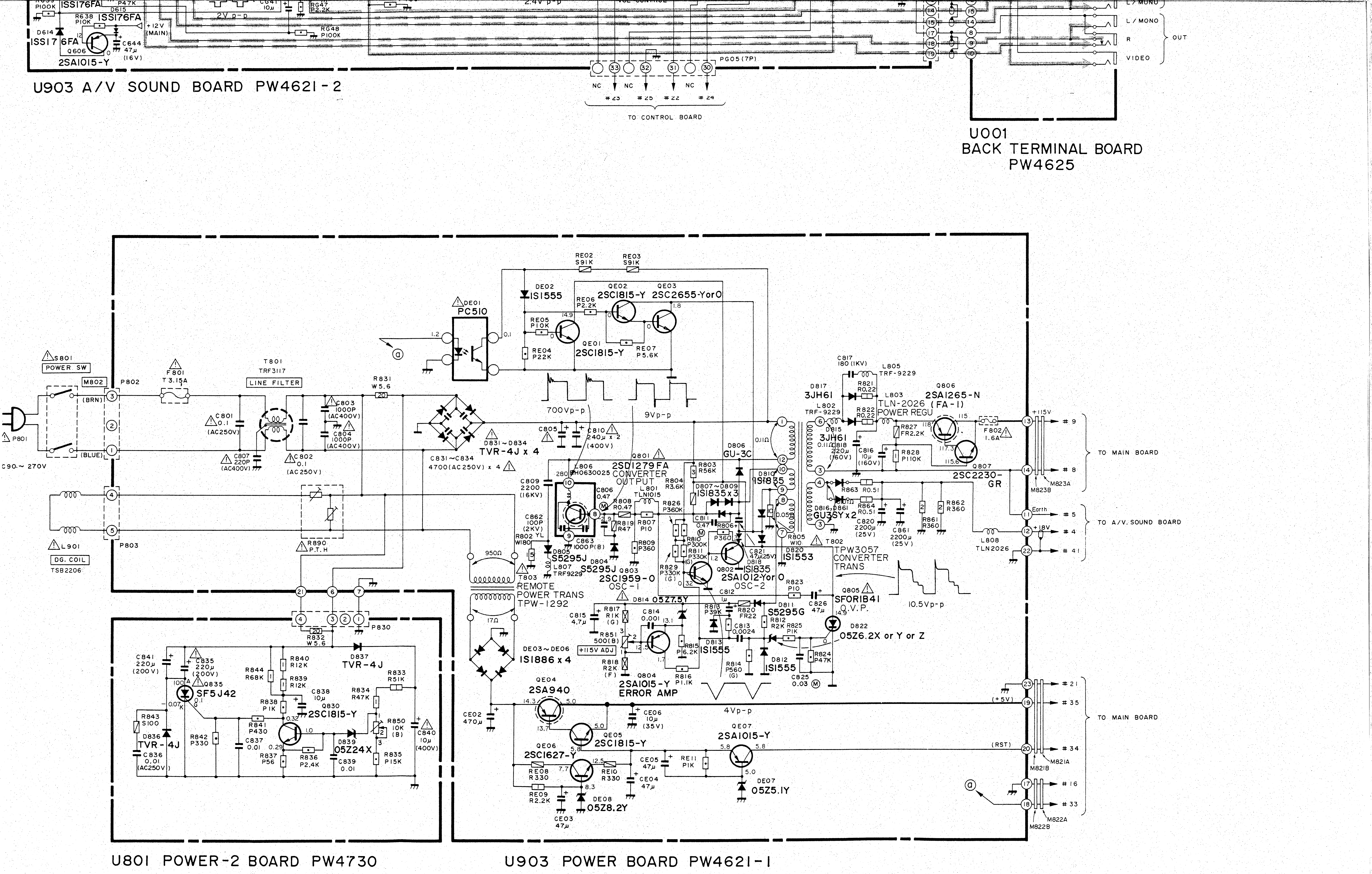
U801 POWER-2 BOARD PW4730

OR

Table 3

| Type | Mark |
|---|---|
| isc 50V Only | ⊣⊢ |
| trolitic | ⊣⊢<br>⊣⊢ |
| trolitic<br>n-Polar | ⊣⊢<br>⊣⊢ |
| Capacitor | ⊣⊢ |
| ther | ⊣⊢ |


HEAD PHONE BOARD
UA01 PW4624-2
P661
HEAD PHONE
R667 P10K
R665 S330
R668 P10K
R666 S330
MG01
PG01
(L)
(R)
IC602
AN7158N
18.2 9.0 0 0 1.2 17.3 17.3 1.3 0 0 9.3 18.2
C635 100μ (25V)
C642 470μ (25V)
C643 470μ (25V)
C634 220P
R620 P2.2K
C636 0.1
R621 R4.7
R622 P27K
C637 0.1
R623 R4.7
R624 P27K
C630 100μ (25V)
C631 100μ (16V)
C632 100
C633 0.022
C629 100μ (25V)
R637 P33K
R619 P330
C626 100
C627 100μ (16V)
C628 0.022
R618 P330
R636 P33K
C638 220
R626 P2.2K
PG08 (3P)
MG08
#12
#22
#11
TO POWER BOARD
R635 0.39
Q605
2SC495-Y
18~20
12.7
C623 100μ (16V)
C624 100μ (16V)
C625 2200μ (25V)
R617 P1.2K
D612
05Z13Y
Q603
2SC1815-Y
R627 P5.6K
R628 P10K
R629 P5.6K
R625 P3.9K
C639 3.3μ
R630 P4.7K
C640 10μ
R633 P3.9K
C641 3.3μ
R631 P10K
Q604
2SC1815-Y
R632 P4.7K
TO MAIN BOARD
#30 #38 #39 #41
#40 #32
AUDIO IN
A/V SW
MUTE
MG07
PG07 (6P)
+12V
#42 #43 #37 #36
VIDEO OUT
VIDEO IN
MG06
PG06 (4P)
TO CONTROL BOARD
#5 #7 #6 #8
MG04
NC
PG04 (5P)
Q215
RN1203
R283 P56K
R273 P1K
(TV) 5.2
(EXT) 0
D261
1SS176FA
R274 P1.5K
R275 P1K
1V p-p
RG43 P33K
RG44 P33K
CG31 4.7μ
CG35 4.7μ
QG08
2SC1815-Y
RG34 P100K
RG36 P10K
CG32 0.01
RG31 P47K
RG32 P5.1K
RG33 P3K
CG33 10μ
CG34 0.22
RG37 P4.7K
QG07
2SC1815-Y
RG35 P39K
RG38 P18K
R615 P150K
R616 P150K
C620 4.7μ
C619 47μ (16V)
C618 0.0047
C617 0.12
IC601
TA7630P
6.5 6.5 6.5 6.5 12 6.4 3.0 3.0
6.5 6.5 6.5 5.9 6.4 3 3.0
C610 0.0047
C611 0.12
D610
1SS176
C612 4.7μ
R610 P1.2K
C613 2.2μ
R611 P1.2K
C614 4.7μ
C615 4.7μ
R612 P1.2K
R640 P1.5K
R613 P1K
R634 P1K
C616 47μ
R614 P1.2K
VOL CONTROL
PG05 (7P)
NC NC NC
#23 #25 #22 #24
TO CONTROL BOARD
RG42 P3.9K
IC211
TA7750P
CG38 1μ
420mV p-p
CG39 1μ
SW
MUTE
0(TV)
4.0(EXT)
C263 10μ
C268 2.2μ
QG05
2SC1815-Y
CG40 10μ
RG46 P100K
RG39 P3.3K
RG40 P1K
CG36 1μ
CG37 1μ
C261
RG41 P1K
R261 P1K
C262 1μ
R262 P1K
D616
1SS176FA
QG06
2SC1815-Y
RG45 P10K
R263 P47K
R264 P47K
D613
1SS176FA
R639 P100K
R638 P10K
D615
1SS176FA
D614
1SS176FA
Q606
2SA1015-Y
C644 47μ (16V)
+12V (MAIN)
Q217
2SC1815-Y
2V p-p
C264 47μ (16V)
R265 P820
+12V (MAIN)
QG09
2SC1815-Y
CG41 10μ
RG47 P2.2K
RG48 P100K
Q212
2SA1015-Y
R277 P27K
R279 P2K
C269 10μ
R278 P68K
R266 P75
R280 P2.7K
Q213
2SA1015-Y
C265 220μ (16V)
R267 P91
R268 P430
R269 P4.7K
C266 3.3μ (16V) (NP)
R270 P22K
D260
1SS176FA
R271 P10K
R295 P47K
C267 10μ
Q214
2SC1815-Y
R272 P3.3K
2.4V p-p
U903 A/V SOUND BOARD PW4621-2
SPK-1133 x 2
W661
W662
(R)
(L)
M004
M005
P004
P005
S001
INT
EXT
P003
PG02 (10P)
MG02
VIDEO
R
L/MONO
IN
OUT
U001
BACK TERMINAL BOARD


U903 A/V SOUND BOARD PW4621-2
U001
BACK TERMINAL BOARD
PW4625
L/MONO
R
VIDEO
OUT
PG05(7P)
NC
#23
#25
#22
#24
TO CONTROL BOARD
D614
ISS176FA
Q606
2SA1015-Y
C644 47µ (16V)
+12V (MAIN)
R638 P10K
RG48 P100K
RG47 R2.2K
2V p-p
2.4V p-p
S801
POWER SW
M802
(BRN)
(BLUE)
P801
C90~270V
P802
F801 T3.15A
T801 TRF3117
LINE FILTER
C801 0.1 (AC250V)
C807 220P (AC400V)
C802 0.1 (AC250V)
C803 1000P (AC400V)
C804 1000P (AC400V)
R831 W5.6
D831~D834 TVR-4J x 4
C831~C834 4700(AC250V) x 4
C805
C810 240µ x 2 (400V)
L901
DG. COIL
TSB2206
P803
R890 P.T.H
DE01 PC510
DE02 IS1555
RE05 P10K
RE04 P22K
QE01 2SC1815-Y
RE06 P2.2K
QE02 2SC1815-Y
QE03 2SC2655-Y or O
RE07 P5.6K
RE02 S91K
RE03 S91K
700Vp-p
9Vp-p
Q801 2SD1279FA
CONVERTER OUTPUT
L806 PH0630025
C809 2200 (16KV)
C806 0.47
R808 R0.47
R819 R47
L801 TLN1015
R807 P10
R809 P360
R804 R3.6K
R803 R56K
C862 100P (2KV)
R802 YL W180
D805 S5295J
L807 TRF9229
C863 1000P(B)
D804 S5295J
Q803 2SC1959-O
OSC-1
T803
REMOTE POWER TRANS
TPW-1292
950Ω
17Ω
DE03~DE06 IS1886 x 4
D806 GU-3C
D807~D809 IS1835 x 3
D810 IS1835
C811 0.47
R806
R826 P360K
R810 P300K
R811 P330K
R829 P330K
Q802 2SA1012-Y or O
OSC-2
D818 IS1835
C821 47µ(25V)
D820 IS1553
R805 W10
T802
TPW3057 CONVERTER TRANS
R823 P10
C812
R813 P39K
R820 FR22
C813 0.0024
D811 S5295G
C826 47µ
Q805 SF0R1B41
O.V.P.
D822 05Z6.2X or Y or Z
R812 R2K
R825 P1K
R824 P47K
C825 0.03
D812 IS1555
D813 IS1555
R814 P560
R815 P6.2K
R816 P1.1K
D814 05Z7.5Y
R817 R1K
R818 R2K
C815 4.7µ
C814 0.001
R851 500(B)
+115V ADJ
Q804 2SA1015-Y
ERROR AMP
10.5Vp-p
4Vp-p
C817 180 (1KV)
L805 TRF-9229
R821 R0.22
R822 R0.22
D817 3JH61
L802 TRF-9229
L803 TLN-2026 (FA-1)
POWER REGU
Q806 2SA1265-N
D815 3JH61
D818 220µ (160V)
C816 10µ (160V)
R827 FR2.2K
R828 P110K
F802 1.6A
Q807 2SC2230-GR
R863 R0.51
R864 R0.51
D816, D861 GU3SY x 2
C820 2200µ (25V)
C861 2200µ (25V)
R861 R360
R862 R360
L808 TLN2026
+115V
#9
#8
M823A
M823B
TO MAIN BOARD
Earth
+18V
#5
#4
#41
TO A/V. SOUND BOARD
CE02 470µ
QE04 2SA940
CE06 10µ (35V)
QE05 2SC1815-Y
QE06 2SC1627-Y
RE08 R330
RE09 R2.2K
RE10 R330
CE03 47µ
DE08 05Z8.2Y
CE05 47µ
CE04 47µ
RE11 P1K
QE07 2SA1015-Y
DE07 05Z5.1Y
(+5V)
(RST)
#21
#35
#34
#16
#33
M821A
M821B
M822A
M822B
U903 POWER BOARD PW4621-1
P830
R832 W5.6
D837 TVR-4J
C841 220µ (200V)
C835 220µ (200V)
Q835 SF5J42
R843 S100
D836 TVR-4J
C836 0.01 (AC250V)
R842 P330
R844 R68K
R840 R12K
R839 R12K
R838 P1K
R841 P430
C837 0.01
C838 10µ
Q830 2SC1815-Y
R837 P56
R836 P2.4K
D839 05Z24X
C839 0.01
R834 R47K
R833 R51K
R850 10K (B)
R835 P15K
C840 10µ (400V)
U801 POWER-2 BOARD PW4730